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INTERIM REPORT ON DYSPEPSIA IN THE ARMY

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Early in the war it was noticed that indigestion appeared to present the biggest medical problem among the sick invalided back to the United Kingdom from the British Expeditionary Force in France. The Royal College of Physicians therefore appointed us to carry out an investigation under the auspices of the Leverhulme Trust during the three months February to April, 1940. The volume of material will take some time to analyse, but the importance of the problem has become obvious to so many in the meantime that it seems better to publish a brief interim report at once, similar to those presented to the Royal College of Physicians and to the Army.

During the period between the dispatch of the B.E.F. and April 29, 1940, 12.5% of all cases evacuated to the United Kingdom had a primary diagnosis of gastric or duodenal disease. If the emergency evacuation of the base hospitals (when even minor illnesses were sent home) is excluded the figure is 14.4%. This represents only a portion of the total dyspeptic cases in the base hospitals in France, but, even so, the figure is much higher than, for instance, that of the cardiac cases, including effort syndrome, which have received so much attention.

The method adopted was to take a full and detailed history of the whole of the patient's life from birth to the time he was seen by us, correlating his work, habits, diet, and environmental conditions with his medical history, especially his digestion. To this were added in each case full details of the dyspeptic syndrome, observations on teeth, build, weight, and height, and other physical details; the family history; details of his personal habits with regard to alcohol, tobacco, and exercise; observations on the effect of the war upon the economic condition of his family or dependants; and, finally, such conclusions as to his intelligence and psychological make-up as it was possible to draw from one interview.

Clinical Material

Of 287 cases investigated, 201 were from France and 86 from England. We visited six Emergency Medical Service hospitals to which convoys had been sent from France. In each hospital we saw every case in which a primary diagnosis suggested a gastric or duodenal lesion, together with a few which had been found, after admission, to be suffering from such diseases. We had a complete list of suspected gastric or duodenal cases, in every instance through the kindness of Colonel G. B. Edwards, who kept us supplied, from the Medical Disembarkation and Distribution Headquarters, with nominal rolls of all convoys on which the diagnosis of each case was entered. In this way we saw a representative and unselected sample of the dyspeptic cases being invalided home from France. Subsequently we investigated the 86 cases of local sick in two large military hospitals in this country.

The majority of cases seen were N.C.O.s and men, but there was a small group of officers. Even with very strict criteria it was possible to make an exact diagnosis in most instances. In some cases the patients had already been under treatment for so long that radiography was done too late to be likely to reveal an ulcer crater. We felt that in some instances there was too great a tendency to expect a demonstrable ulcer crater in the duodenal cases. The small groups of probable ulcers shown in Tables I, II, and III represent cases in which, although it was impossible to prove the presence of an ulcer, there was every clinical reason for supposing that this was the actual pathological lesion. There was a small group of difficult cases, including the psychological ones, in which only investigation by every known means would have enabled an exact diagnosis to be made. In Table I is given a summary of all the cases, both from France and from England.

TABLE I.—*Dyspepsia in Army: 287 Cases from France and England*

Proved ulcers (226):		Gastritis and duodenitis	7
Gastric	42	Carcinoma	1
Duodenal	164	Volvulus of stomach	1
Gastric and duodenal	7	Indefinite dyspepsia	4
Anastomotic	4	Gastro-enteritis	5
Anastomotic and duodenal	1	Neurotic and functional	11
Site undetermined	8	Misdiagnosis (non-gastro-duodenal)	11
Probable ulcers (21):			
Gastric	2		
Duodenal	19		

Cases from France

A summary of the cases from France is given in Table II. It was particularly in this group that there was in some instances a considerable delay between the beginning of treatment and the radiological examination.

TABLE II.—*Dyspepsia in Army: 201 Cases from France*

Proved ulcers (167):		Gastritis and duodenitis	5
Gastric	26	Carcinoma	0
Duodenal	124	Volvulus of stomach	1
Gastric and duodenal	5	Indefinite dyspepsia	3
Anastomotic	4	Gastro-enteritis	0
Anastomotic and duodenal	1	Neurotic and functional	7
Site undetermined	7	Misdiagnosis (non-gastro-duodenal)	5
Probable ulcers (13):			
Gastric	2		
Duodenal	11		

Cases from England

After completing the investigation of the cases sent home from France it was suspected that this clinical material, although representing the more serious disorders,

did not show the whole problem of dyspepsia as it appeared to the medical officers in France. There were reasons for believing that the gross organic lesions were very accurately selected and sent home, but that there were a certain number of cases, including the minor dyspepsias, which were not represented in our series. We therefore spent the rest of the period of investigation in visiting two large military hospitals which admitted local sick from the Army in England. The summary of the results in the cases from England is set out in Table III.

TABLE III.—*Dyspepsia in Army: 86 Cases from England*

Proved ulcers (59):		Gastritis and duodenitis	2
Gastric	16	Carcinoma	1
Duodenal	40	Volvulus of stomach	0
Gastric and duodenal	2	Indefinite dyspepsia	1
Anastomotic	0	Gastro-enteritis	5
Anastomotic and duodenal	0	Neurotic and functional	4
Site undetermined	1	Misdiagnosis (non-gastro-duodenal)	6
Probable ulcers (8):			
Gastric	0		
Duodenal	8		

Comparison of Cases from France and from England

It will be seen that the diseases in the French and English groups proved to be very similar, though there was a slightly higher proportion of minor and functional disorders in the English group. It is probable, therefore, that the material in the base hospitals in France was not very different from the material seen by us. The material from France was selected, though unselected by ourselves, whereas the English material was selected by ourselves with the help of the hospital medical officers. A proposed visit to France to complete the survey of gastro-duodenal disease was rendered impossible by the military situation.

Results of Investigation

We have data relating to over seventy points on each case. The sorting of these data and the statistical investigation will take some time. From a preliminary survey of the material the following conclusions have been drawn, and have been embodied in reports to the Royal College of Physicians and to the Army authorities.

1. Of the cases 89% are of gross organic disease. Among those investigated there was little evidence of minor dyspepsia.

2. Almost all the organic lesions are ulcers, the majority being duodenal.

3. Of the ulcers 92% were present before the war, and only 8% appeared to have originated in the Army since the war started—that is to say, the vast majority did not originate in the Army, but only relapsed.

4. The age of onset of ulceration is earlier than was expected; in about 40% of the cases it was below the age of 25.

5. The following was the unit distribution in the ulcer cases: A.M.P.C., 56; infantry regiments, 48; R.A., 33; R.E., 29; R.A.S.C., 20; R.A.O.C., 14; R.A.M.C., 8; R.C.O.S., 6; R.A.F., 4; Tanks, 3; others, 5.

6. Of the ulcer cases, 51 (22.5%) originated in regular soldiers before the war.

7. A large proportion of ulcer cases were in reservists or supplementary reservists. The medical examination, although it did not exclude any of these men from service in the Army, appeared to have been thorough in 87.8% of our cases examined by civilian recruiting boards, but in only 26.3% of our cases examined by military medical officers, who were too rushed to be able to examine the men thoroughly.

8. In only a few cases were inquiries made about previous dyspepsia, but where these were made some men were loth to report it, and others were in a state of remission at the time. A proportion of the cases could probably have been suspected on the grounds of obvious pallor, wasting, and abdominal scars.

Considering the small number of ulcers which originated during the war, this investigation is not likely to throw any light on the origin of peptic ulceration. But we investigated many points which have been thought to be contributory, and some of the findings are listed below.

Conclusion

1. Practically all the ulcer patients had lived for years on a relatively strict diet, and the breakdown appeared to be due to the change to Army food, which is too heavy for those prone to ulcers. In our opinion this was the most important factor leading to breakdown.

2. Many men replaced their rations by food bought outside and so avoided a breakdown until they got to France, where this practice became difficult or impossible.

3. One of the effects of the heavy diet was to cause a much higher incidence of vomiting in the duodenal ulcer cases than is met with in civilian life, and in many instances this persistent vomiting was the determining factor in the men's going sick.

4. There was much criticism that the cooking in the Army was bad. Men who served in the last war say that the actual food is better in this one, but there was a constantly reiterated complaint of good food spoilt. This criticism applies especially to the early months of the war, and it is right to point out that the criticism comes from men with abnormal digestions. Most of the men were from newly formed units, and inspecting medical officers, including the hygiene specialists, who were constantly investigating the cooking, found that the standard was generally high in the majority of units considering the field conditions prevailing. In the early stages of the war experienced cooks could not be provided for all new formations, but the matter was taken in hand from the start, new schools of cookery established, and experts appointed to advise and instruct units.

5. Fatty food, which was easily dealt with, and even appreciated, by healthy men, appeared to these dyspeptics to be "greasy" and was considered by them to be a serious drawback.

6. During the winter of 1939–40 green vegetables were scarce in some places, and the cooking in some units was not good. The dyspeptic patients, by voluntary restriction of their diets, still further reduced their vitamin C intake and were certainly deficient in this factor. Apart from the possible bearing of this on peptic ulceration there is abundant evidence that vitamin C is essential for adequate resistance to infections and for the prevention of complications.

7. Among the ulcer patients 38% had teeth which were inadequate as a chewing mechanism. This factor is important when taken in conjunction with the heavy food these men were eating in the Army.

8. Only 15% of the ulcer cases showed dental sepsis.

9. Psychological factors do not seem to have played an important part in the breakdown of ulcer patients in the Army.

10. There are a certain number of genuine neurotic disorders. Malingering, the exaggeration of symptoms for evasive purposes, and pension-seeking are at present rare. These may become more common in the future, as it is getting known that Army Medical Boards are discharging men with peptic ulcers.

11. The incidence of peptic ulceration in the Army is likely to persist and even to increase, because conscription

is beginning to involve the age groups in which ulcers are common.

12. Our experience proved that the sorting of serious cases in France for invaliding to this country was very efficient.

Recommendations

On the basis of this investigation we have submitted to the Army authorities certain recommendations on recruiting, treatment, and disposal.

This work was carried out with aid from the Leverhulme Fund of the Royal College of Physicians and at the suggestion of Colonel H. Letheby Tidy. We should like to thank the Military and Emergency Medical Service authorities, the commanding officers, medical superintendents, and staffs of all the hospitals we visited for their great assistance and unfailing courtesy.

A NOTE ON THE TRANSFUSION OF RECONSTITUTED DRIED HUMAN SERUM

BY

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The usefulness of plasma and serum in the treatment of shock and even acute haemorrhage is now generally recognized, but there is some uncertainty whether serum has any disadvantages as compared with plasma.

Among those who have referred to the supposed toxicity of serum are Strumia, Wagner, and Monaghan (1940) and Scudder (1940). Levinson, Neuwelt, and Necheles (1940), although they preferred serum to plasma because of clotting difficulties with the latter, found reactions in 25% of cases. These reactions consisted of a moderate transient drop in blood pressure: spontaneous recovery always occurred. This effect was not repeated with subsequent infusions. Some "pools" cause reactions in one case and not in another. Buttle, Kekwick, and Schweitzer (1940) concluded from animal experiments "that some toxic substance absent from plasma was present in serum." They found with serum "that immediate reactions are more numerous than with plasma, and the return of the blood pressure is not sustained." Black (1940), too, has stated that results with serum are less favourable than with plasma. This conclusion, however, was reached from a study of only three cases.

A different point of view is that of Magladery, Solandt, and Best (1940), who state dogmatically that "there is no need to differentiate between serum and plasma. In theory and in our experience they are therapeutically identical." In an earlier paper Best and Solandt (1940) had reported successful results with three-times-normal serum in the treatment of shock in animals. They do, however, hint that reactions may happen, by saying that "if any untoward reaction occurred [in a control dog] serum from another pool was used." Bond and Wright (1938) reported good results in the treatment of haemorrhage and traumatic shock with lyophile serum. In these experiments (on animals) no reactions were noted. Wright, Bond, and Hughes (1938) reported results of treating raised intracranial pressure in man with concentrated serum. No untoward results arose.

Perhaps a recent statement by Levinson (1940) may contain the truth on this question and explain past discrepancies with regard to results with serum. Speaking in a discussion he said, "I protest emphatically that properly prepared serum is not toxic. . . . Wide experience from all serum centres indicates that properly prepared serum is safe. I have no doubt that if plasma was improperly prepared it would not be innocuous."

Some Points in Technique

The object of this note is to point out that the dried serum emanating from the Medical Research Council's serum drying unit at Cambridge is not only safe but efficacious. The Cambridge drying plant has already been fully described by Greaves and Adair, and it suffices to say that the process consists essentially in drying from the frozen state *in vacuo*. Before drying the serum is passed through a Seitz filter.

Ninety-one transfusions of this serum have been given. Most of the serum used was from donors of Group AB. Some serum of Group A and some pooled serum were also given. In most cases the serum was administered in four-times-normal concentration by reconstituting the dried powder to only a quarter of the volume of the original serum. This concentration was chosen partly because of the convenience of handling a smaller bulk of fluid (so that in some cases a syringe could be used for the administration), and partly because of suggested theoretical advantages of a fluid with a high protein concentration. Thus, in shock it has been suggested that the injection of a fluid of high osmotic pressure may help to reverse the flow of fluid from the capillaries

TABLE I

Case No.	Clinical Condition	Serum: Conc.	Serum: Dose c.cm.	Time for Inj. (mins.)	Change in B.P.	Change in Pulse	Change in Hb%	Result
1	P.P.H. ..	×4	45	14	75/45–100/80	152–116	65–54	
2	P.P.H. (850 c.cm. blood last)	,,	50	5	145/85–155/85	84–88	40–40	
3	Head injury..	,,	,,	5	84/60–98/62	120–104		
4	Post-op. shock	,,	,,	10	36/? –76/50	160–128		+
5	Acute haemorrhage	,,	,,	3	74/? –104/40	146–124	70–66	+
6	Intra-op. shock	,,	,,	3/4	60/30–70/30	160–130		+
7	Haematemesis,	(1) ,,	,,	9	74/52–82/48	124–118		+
	coronary thrombosis	(2) ,,	,,	9	80/52–86/50	116–120		+
8	Post-op. shock,	(1) ,,	,,	4	100/68–124/76	84–86	80–80	
	usual B.P. 214/120	(2) ,,	40	2½	112/78–134/80	84–92	80–80	
9	Wound shock	(1) ,,	50	4	80/? –98/70	126–114	72–68	+
	operation	(2) ,,	,,	7	106/84–124/90	126–112		+
10	Post-op. shock	(1) ,,	,,	5	104/84–114/82	128–124	Hmt	+
		(2) ,,	,,	4	116/86–128/90	128–120	40 →38	+
11	Acute haemorrhage, operation	(1) ,,	40	4	66/34–102/56	92–108		+
		(2) ,,	50	4	100/50–112/56	88–96		
12	P.P.H. ..	,,	100	10	90/60–100/75	110–96	74–70	
13	Post-op. shock	,,	,,	10	85/55–125/75	144–100	90–78	+
14	Traumatic shock	,,	,,	30	40/20–60/30	116–108	64–66	
15	Head injury, shock	,,	,,	8	68/44–76/42	92–84	82–70	
16	P.P.H. ..	,,	100	20	90/50–125/75	112–100	65–50	+
17	P.P.H. ..	,,	,,	15	70/40–90/50	160–152		+
18	Severe menorrhagia	,,	,,	15	108/55–140/55	116–108	40–34	+
19	Traumatic shock	,,	,,	8	75/30–105/55	74–108	90–84	+
20	Gross internal injuries	,,	150	5	Unrecordable	?		
21	Post-op. shock	,,	200	30	0–50/25	120–108	72–56	+
22	Traumatic shock	,,	200	25	120/65–125/75	120–90		+
23	P.P.H. ..	,,	250	35	100/85–165/125	140–104	80–58	+
24	Wound shock: operation	(1) ,,	50	5	56/30–72/38	100–100	90	
		(2) ×2	100	3	72/48–80/48	100–112		
		(3) ,,	100	7	64/38–72/38	136–130	66	
25	,,	(1) ×4	50	1¾	40/20–40/30	88–94	86–84	
		(2) ×2	100	3	60/? –80/?	94–120	84–82	+
		(3) ,,	100	2	78/? –88/68	124–120	82–79	+
26	Burn shock ..	(1) ×4	50	4½	Return of pulse			+
		(2) ×2	100	6		112–100		+
		(3) ,,	100	7	—			
27	Wound shock: operation	,,	400	25	102/60–112/60	88–92	—	
28	Burn shock ..	N	300		0–120/100	—	—	+
29	,,	(1) N	300		100/75–130/75	96–94	—	+
		(2) ,,	500		40/75–130/75	96–84	—	+
30	,,	,,	300		95/70–130/70	88–92	—	+
31	Post-op. shock	,,	510	55	80/45–110/55	116–96	—	+
32	Burn shock ..	,,	1,200		94/70–110/75	96–96	—	+

+ = Clinical improvement.

into the tissues. In some of the other conditions treated—namely, nephrosis, where the object was simply to increase the plasma proteins rather than the blood volume—it was again thought that the more concentrated solution might be preferable. Because of its high viscosity this solution must be given under pressure. In some cases this was accomplished simply by applying pressure to the air inlet of the bottle containing the serum. In others a 50 c.cm. all-glass syringe was employed. Glass and metal syringes are contraindicated for this solution because of the greater likelihood of their becoming stuck.

One of the disadvantages of using these high concentrations is the rather long time taken for complete solution. This can be materially reduced by vigorous shaking of the dried serum before adding the distilled water, so that all lumps are well broken up. Furthermore, the water for solution should be warmed to 40° C. before addition. Even when these precautions are taken complete solution rarely occurs in less than half an hour. For this reason, in several cases the serum was made up on the day before use and kept in the refrigerator.

The dried serum can be reconstituted to normal volume in approximately five minutes if the above-mentioned precautions are taken. The dose of four-times-normal serum ranged from 40 to 500 c.cm., and of normal serum from 300 to 1,200 c.cm. Approximately half of the cases treated had had a recent haemorrhage or were in a state of shock. The results are analysed in Table I.

No attempt was made to bring the serum to body temperature before transfusion and it was usually given at approximately room temperature.

Results of Serum Transfusion

In Table I the first figure under the heading "Change in B.P." refers to the reading immediately before the start of the transfusion. The second figure is the maximum recorded pressure during the thirty minutes after the end of the transfusion. Incidentally, a feature of the results was the rapid increase in blood pressure after the transfusions. Often 80% of the maximum rise obtained took place within five to ten minutes of the transfusion. The rises in pressure will be seen to vary very much, but on the whole they are higher with the larger doses. Practically every case shows some rise in blood pressure, and, although some had only 50 c.cm. of four-times-normal serum and some cases were obviously moribund at the time of transfusion, yet out of a total of forty-one injections in which blood-pressure readings were made twenty-three showed a rise of 15 mm. Hg or more in the systolic pressure within thirty minutes. No instance of a fall in pressure (found by Buttle *et al.* and by Levinson, 1940) after the transfusion of serum was observed although in many instances readings were taken every few minutes.

If a change in pulse rate of more than 10 beats per minute is considered significant it will be seen that out of forty injections in which pulse records were made the pulse slowed in sixteen cases, rose in four, and did not change significantly in twenty. Few records of change in haemoglobin percentage or haematocrit are available, but it will be noticed that in the majority of the cases investigated evidence of haemo-dilution after the injections was obtained.

It was considered that unequivocal evidence of clinical improvement was found in twenty-eight out of forty-four transfusions. It is clear that the results are better when larger doses are given; and from our experience we would suggest that not less than the equivalent of 400 c.cm. of normal serum be administered initially. Larger quantities will almost certainly be required in severe cases.

The results from the use of serum in cases with presumed normal blood volume have not been analysed, chiefly because they were obtained from such widely varying clinical cases. The reactions after all these transfusions have, however, been analysed in Table II. Two groups of cases—reduced blood volume and normal blood volume—have been separated.

TABLE II.—*Reactions**

Conc. of Serum	No. of Injections	No. of Reactions	Rigors	Rise in Temp. Alone	Pain in Back	Urticaria	Vomiting
Normal Blood Volume—			Reconstituted Dried Serum				
×4	31	12	5	1	2	2	2
×2	10	0	—	—	—	—	—
N	6	1	1	—	—	—	—
Total	47	13	6	1	2	2	2
Reduced Blood Volume—							
×4	31	6	1	0	1	0	4
×2	7	0	—	—	—	—	—
N	6	0	—	—	—	—	—
Total	44	6	1	0	1	0	4
			Liquid Plasma				
	21	6	5	1			

* When a patient showed more than one type of reaction each type has been included in the table as a separate reaction. The total number of reactions tabulated is therefore higher than the number of patients showing "reactions" after transfusion.

Reactions after Serum Transfusion

After the ninety-one transfusions seven febrile reactions were noted: there were six cases of vomiting, two of urticaria, and three of lumbar pain. All these reactions were mild, but the last-named calls for comment.

During three of the transfusions of four-times-normal serum the patient complained of severe pain, cramp-like in nature, referred to the lumbar region. The pain in some instances radiated to the sacral region. The symptom was of short duration and was not followed by further symptoms or signs. The serum was all of Group AB or A (or in a few cases from serum "pools"), and in no case was this given to recipients of Group B or AB, so that there was no reason to suspect a haemolytic reaction. Nevertheless, direct matching tests between the serum given and the corpuscles of the recipient were performed in these cases of lumbar pain, and no agglutination could be observed. Moreover, there was no haemoglobinuria in any of these cases.

On account of the occurrence of lumbar pain and of difficulties in administration serum might be better given in lower concentration. A further contraindication to using four-times-normal serum is the rather frequent accident of thrombosis in the vein injected. Twice-normal serum will run quite easily by gravity through the ordinary needle used for injection.

Although experience with liquid citrate plasma has been limited, it has been thought worth while to record the reactions in a series of twenty-one cases, as these, like those in which serum was given, have all been observed personally. Six reactions, all mild, were noted.

Further Observations

We are permitted to add the following information, which is relevant to our results.

When serum was first dried at Cambridge samples from donors of Group AB were issued to certain observers, who were especially asked to note any reactions, however mild. Fifty-three transfusions were given to normal individuals, patients who were sick but not requiring transfusions, and a few cases of burns. Reactions were noted in nine cases;

of these, six were very mild, one had an urticarial rash, one lumbar pain, and one a severe rigor and temperature. The last reaction was traced to secondarily infected serum. The dose was 50 or 100 c.cm. of four-times-normal reconstituted serum.

More recently, dried serum from serum "pools" has been issued to many hospitals in Sectors I and II. With the serum a pro forma was circulated and observers were asked to note the occurrence of reactions, however mild. Through the co-operation of Drs. Kidd and Wilson (the Sector Transfusion Officers), and many medical officers in the sectors, sixty-seven forms have been returned to the Medical Research Council, including those of nine cases which had liquid plasma. Most of these transfusions were given to air-raid casualties and a few to cases of post-operative shock. The results are tabulated below. No preliminary grouping tests were performed in these cases.

	No. Transfused	Reactions	
Serum alone ..	58	6	400 c.cm. of N or 200 c.cm. of 2N serum
Plasma alone..	9	2	1–2 bottles

The reactions in both series were mild and consisted of a very slight rigor with a small rise in temperature.

Combining these results with those which we have obtained personally, records of 202 transfusions of dried serum are available, in which thirty-four reactions, practically all of them mild, have been observed, while in thirty plasma transfusions reactions occurred in eight instances.

Summary

Evidence is presented that serum prepared at the Medical Research Council serum drying unit at Cambridge is not toxic. Furthermore, the administration of this serum to cases of shock has been followed by successful results.

The reaction rate after a small series of plasma transfusions has been noted for comparison. Little difference between the two series is evident.

Our thanks are due to Drs. O. M. Solandt and Janet Vaughan for helpful criticism and to many members of the staffs of various hospitals in the S.W. and N.W. areas for putting cases at our disposal. We should also like to thank Drs. A. C. Dornhorst and D. H. G. MacQuaide for permission to include certain cases observed with their co-operation.

Thanks are due to many medical officers for their co-operation, which has enabled the additional information to be collected.

REFERENCES

Best, C. H., and Solandt, D. Y. (1940). *British Medical Journal*, **1**, 799.
Black, D. A. K. (1940). Ibid., **2**, 693.
Bond, D. D., and Wright, D. G. (1938). *Ann. Surg.*, **107**, 500.
Buttle, G. A. H., Kekwick, A., Schweitzer, A. *Lancet* (1940), **2**, 507.
Levinson, S. O. (1940). *J. Amer. med. Ass.*, **115**, 1169.
—— Neuwelt, F., and Necheles, H. (1940). Ibid., **114**, 455.
Magladery, J. W., Solandt, D. Y., and Best, C. H. (1940). *British Medical Journal*, **2**, 248.
Scudder, J. (1940). *Ann. Surg.*, **112**, 502.
Strumia, M. M., Wagner, J. A., and Monaghan, J. F. (1940). *J. Amer. med. Ass.*, **114**, 1337.
Wright, D., Bond, D., and Hughes, J. (1938). *Arch. Neurol. Psychiat.*, Chicago, **39**, 1288.

M. Hoareau (*Thèse de Paris*, 1940, No. 243) states that benign tumours of the stomach, though rare, are not so exceptional as was once supposed. It is now generally agreed that they form from 0.5% to 2% of all gastric tumours. Both sexes are equally affected. The age of the patients is rarely below 50; in exceptional cases it may exceed 70. The symptoms are very variable and depend much more on the site of the tumour than on its histological nature. The most dangerous tumours are schwannoma and adenoma, owing to the likelihood of haemorrhage, and every form of benign tumour is liable to undergo a cancerous change. Early and extensive removal is the only curative treatment. When an operation is contraindicated by the patient's age or general condition, deep radiotherapy should be employed.

A CASE OF COMPLETE OBSTRUCTION OF THE INFERIOR VENA CAVA

BY

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There must be very few individuals who have survived such a drastic disturbance of the venous circulation as is presented by the obliteration of the whole length of the inferior vena cava from its starting-point at the level of the fifth lumbar vertebra to the groove in the liver where it is joined by the hepatic veins. The lesion, if produced suddenly, means the elimination of the venous return from the abdominal walls, from all the pelvic organs except the rectum, from both lower limbs, and, above all, from both kidneys and suprarenals. Although some of the venous blood from the abdominal walls and the upper parts of the thighs might find its way back to the heart via the superior epigastric and internal mammary veins, or via the ascending lumbar and azygos veins, the total arrest of the kidney circulation would lead to death in a short time.

An instance of the rare condition of complete obstruction of the inferior vena cava was discovered accidentally in a dissecting-room subject, a coloured man aged 71. There was nothing in the clinical history which gave any explanation of the causation of the venous thrombosis. The man was blind and had spent the last eleven years of his life at the Capetown Infirmary. He was not bedridden and could get about for walks. His last illness was a rather sudden collapse with pulmonary congestion; nothing abnormal was found in the abdomen or urine during the last few days before his death.

Following the usual procedure in the department, the limbs were first dissected. The group of students concerned had noticed an extensive varicosity of the right groin and right lower limb, to which no particular importance was attached; the left leg was free from varicosity. When the abdomen was dissected and the posterior abdominal wall exposed one found a hard rod-like structure about the size of a thick pencil in the interior and

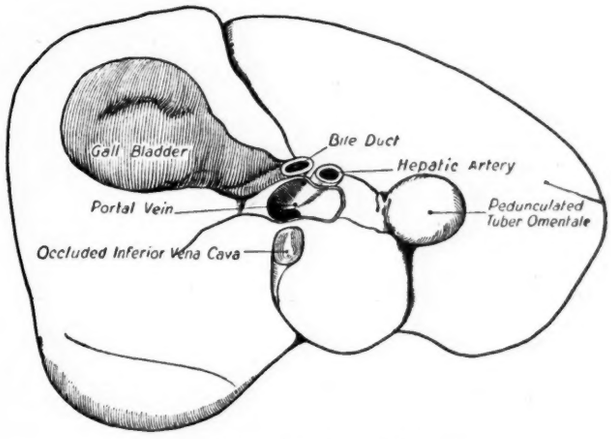

FIG. 1.—Visceral surface of the liver.

occluding the inferior vena cava. The liver had been removed, and on examining the visceral surface of the organ the extraordinary condition illustrated in Fig. 1 was found. The inferior vena cava was completely blocked by a mass of fibrous tissue containing an inner core of calcified material. The diaphragmatic surface of the liver presented a striking contrast. Here the

inferior vena cava was widely open and received the usual number of large hepatic veins (Fig. 2). The opening for the inferior vena cava in the diaphragm had the normal dimensions.

The liver itself was of average size. It showed no abnormalities beyond a pedunculated tuber omentale, and the portal circulation had obviously been intact. A closer examination of the portion of the inferior vena cava at

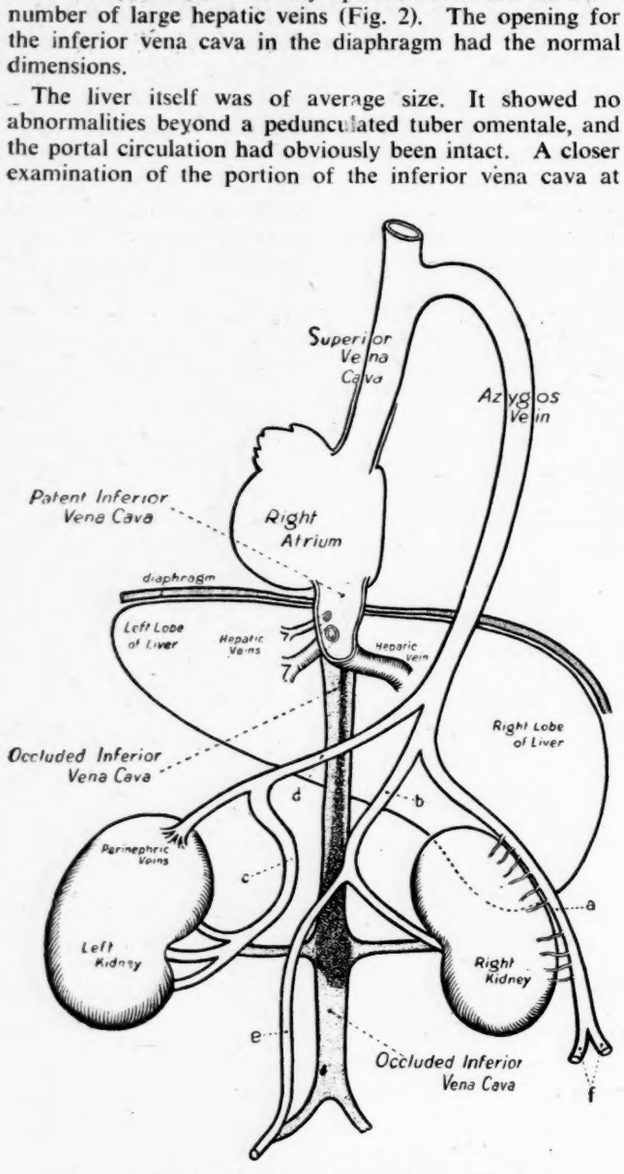

FIG. 2.—Diagram of the collateral venous circulation viewed from behind.

the back of the liver showed that the vessel was replaced by a thick fibrous band for about two-thirds of the distance to the diaphragm. A central core of calcified matter occupied about one-fourth of the area of the cut surface (Fig. 1). At the point where the inferior vena cava was joined by the first hepatic vein from the right lobe of the liver there was a sudden transition to a large open vessel. Probing of the open portion revealed a complete shutting-off below, at the point where the fibrous part abutted against the first hepatic vein. In the middle portion of the inferior vena cava—i.e., the part just below the entrance of the renal veins—opposite the renal veins and for some distance above these vessels, the calcified thrombus filled the vein completely (Fig. 2); this portion measured approximately two inches.

The formation of a phlebolith is regarded as a rare sequel of thrombosis (Franklin, 1936). The more common calcified thrombi are in the form of hard spherical nodules with smooth surfaces lying in the vein and almost free of attachment. "Rarely the calcified thrombus in its original form is transformed into a stony cylinder" (Osler and McCrae, 1927).

Pathology of Thrombosis of Veins

Thrombosis of the inferior vena cava is rare, quite apart from phlebolith formation. In a discussion on the frequency of thrombosis in large veins the femoral vein, the superior mesenteric vein, the portal vein, and the lateral sinus are specially mentioned, but not the inferior vena cava (Franklin, 1936). In textbooks of medicine the two main diseases which are listed in connexion with thrombosis of veins are typhoid fever and pneumonia. Syphilis is mainly linked with diseases of the arteries, but may have had some bearing in this particular case, because the subject showed extensive scarring of the soft palate, indicating an old syphilitic lesion. The septic form of venous thrombosis is almost confined to the lateral sinus as a complication of middle-ear suppuration and to the portal system of veins following acute appendicitis. Theoretically a septic thrombosis in the inferior vena cava would be possible as a sequel to any form of sepsis in its territory of drainage or as a result of a suppurating lymph gland closely applied to its wall. The inferior vena cava may be injured in abdominal operations and become transformed into a fibrous cord as a result. Also it is quite possible that an acute pancreatitis, with the close anatomical relation of the head of the pancreas to the inferior vena cava, might sometimes lead to a thrombosis of this vessel.

Thrombosis of a renal vein may be due to the extension of a thrombus from the inferior vena cava. The immediate symptoms are an increase in the size of the kidney, pain, and haematuria. In patients who recover albuminuria may be present for two or three months. Bilateral thrombosis of the renal veins leads to anuria followed by death (Osler and McCrae, 1927). Therefore we must assume that the complete closure of both renal veins in the present instance was a gradual process.

Collateral Circulation

A dissection of the veins on the posterior abdominal wall behind the inferior vena cava revealed a very perfect collateral circulation. All the venous blood from the lower part of the body except that from the intestinal tract had been successfully short-circuited towards the superior vena cava. Fig. 2 shows that the *right kidney* drained by means of numerous perinephric veins which pierced the capsule of the kidney and joined a dilated right subcostal vein (Fig. 2, a). This vessel was so large that it may be said to have taken the place of the right renal vein. There was also a small anastomotic vein from the right kidney which passed behind the obstructed inferior vena cava and joined a vein which ascended on the vertebrae behind the aorta; the latter vein probably represented the "azygos line" of the embryonic circulation (Gray, 1938) (Fig. 2, e).

The *left kidney* was drained by a large vein which turned sharply backwards (Fig. 2, c), taking the course of the second left lumbar vein behind the psoas major, and ended by joining the beginning of the inferior hemiazygos vein (Fig. 2, d). A region near the upper pole of the left kidney was also drained by dilated perinephric veins. The suprarenal veins pierced the crura of the diaphragm and joined an extensive venous plexus around the aorta. Each ureter was accompanied by an exceptionally large vein which ended in the same plexus and undoubtedly helped in the venous drainage of the organs in the pelvis. The testicular veins were also considerably enlarged.

On the *left side* of the body the obstruction was less severe than on the right, chiefly on account of the open trunk already referred to (Fig. 2, e), which had allowed the distal part of the left common iliac vein to escape thrombosis or perhaps to become recanalized.

On the *right side* there was no "azygos line" in the lower part of the abdomen. The venous blood from the pelvis and lower limb had to find a new route to circumvent the obstructed common iliac vein. Fresh anastomotic channels were opened up in the direction of the deep circumflex iliac and ilio-lumbar veins (Fig. 2, f). Many large veins belonging to this group were found in the lateral and posterior parts of the abdominal wall, and these united to form the beginning of the right subcostal vein. The latter part of the collateral circulation had been more difficult to establish, as evidenced by the dilated superficial veins in the right groin and lower limb.

Discussion

In the absence of a clinical history we must assume that the man had a severe illness of unknown aetiology many years ago. There was no record of any serious disturbance in health during the last eleven years of his life, while an inmate of the Capetown Infirmary. If the deposit of calcium salts can be looked upon as a remote or terminal result of the fibrous organization of a thrombus one may argue that the original lesion in the inferior vena cava began at a level just above the entrance of the two renal veins. It was in the nature of a spreading thrombosis and could not have caused a total blockage of both renal veins at once, as this would have been incompatible with life. The extreme resiliency of the venous system in compensating for the obstruction would perhaps justify a further assumption—namely, that the original illness occurred when the patient was a young man or perhaps even in childhood: only young tissues could have shown this wonderful adaptability. The kidneys, both of normal size, had recovered completely from their extraordinary handicap, and the man lived to the ripe age of 71.

It is an interesting point whether the condition could have been diagnosed during life. The varicosities on the right side pointed in the direction of a venous thrombosis. A collateral circulation which had caused an enlargement of the deeply situated azygos system of veins cannot be discovered clinically. A normal urine, once compensation was established, would hardly have allowed one to suspect a complete blockage of both renal veins. A radiograph of the posterior abdominal wall was taken in the department, but the inferior vena cava outline could hardly be seen. Evidently the condensation of calcium salts in the fibrosed vein was not dense enough to show up with any distinctness against the shadow of the vertebral column.

BEARING ON DECAPSULATION OF THE KIDNEYS

The most remarkable feature of the collateral circulation was the enlargement of the veins in the perinephric fatty capsule of the kidneys. These formed large bunches of veins surrounding the kidney and piercing its fibrous capsule. The perinephric fat belongs to the extraperitoneal tissue, and one of the functions of this important layer is "to establish, through its vascular plexus, communications between the parietal vessels and those distributed to the abdominal viscera" (Cunningham, 1937). This function could not have been illustrated in a more striking manner.

The operation of decapsulation of the kidneys was originally proposed by Edebohls (1901). It was thought that the thickened fibrous capsule of the kidney prevented the establishment of a collateral circulation. More recent literature on the subject shows that the original theory finds few supporters. When the renal veins are free the anastomotic channels do not establish themselves easily, and the fibrous capsule which forms after the operation is often thicker and firmer than the first one. The operation is still recommended in chronic Bright's disease and in certain forms of acute nephritis, but the most striking successes occur in puerperal eclampsia (Thomson-Walker, 1936). It has been suggested that the success of the operation is not connected with the collateral circulation at all, but has to do with the removal of the sympathetic renal plexuses which ramify in the capsule (Sen, 1936). It is stated that the blood flow through the kidney substance improves because the vasoconstricting influence of the sympathetic is removed.

After seeing the extraordinary development of the venous circulation in the perinephric fat and through the fibrous capsule of the kidney in the present case it is clear that there is a strong anatomical justification for operations planned to establish new blood channels. It suggests that the original explanation of the successes claimed for decapsulation of the kidney—i.e., one based on collateral circulation—remains the correct one.

Summary

A short account is given of the anatomy of a case that demonstrates the remarkable potentialities of the body for establishing circulatory anastomoses.

From this case it appears to be possible to establish a complete collateral circulation for the drainage of both kidneys.

These findings may prove to be important clinically.

REFERENCES

Cunningham, D. J. (1937). *Text-Book of Anatomy*, 7th ed., p. 573, London.
Edebohls, G. M. (1901). *Med. Rec.*, **59**, 690.
Franklin, K. J. (1936). *A Monograph on Veins*, Baillière, Tindall and Cox, London.
Gray, H. (1938). *Anatomy*, 27th ed., p. 156, London.
Osler, Sir W., and McCrae, T. (1927). *Modern Medicine*, vol. 4, Philadelphia.
Sen, S. K. (1936). *Brit. J. Urol.*, **8**, 319.
Thomson-Walker, Sir J. (1936). *Genito-Urinary Surgery*, 2nd ed., p. 170, Cassell, London.

IMPERFECT STERILIZATION OF DRESSINGS AS A PROBABLE CAUSE OF POST-OPERATIVE TETANUS

BY

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When recording the results of experiments on the sterilization of dressings (Hayes, 1937) I ventured to express the opinion that imperfect sterilization could be the cause of unexplained post-operative tetanus. The present paper is concerned with experiments conducted to indicate the viability of tetanus spores inserted in the centre of dressings and sterilized under certain conditions. Unfortunately, owing to the onset of war, it was not possible to complete the full range of experiments desired.

Catgut as a Cause of Post-operative Tetanus

Imperfectly sterilized catgut has for many years been considered to be the chief cause of post-operative tetanus. Evidence is, however, accumulating which indicates that it does not play the important part previously accepted. There is considerable disagreement amongst authorities as to whether catgut is the chief cause. Fildes (1929) believes that it is, but also states that positive evidence is meagre. Mackie (1928) and Mackie, McLachlan, and Anderson (1929), agreeing with Fildes, point out the "peculiar relationship of post-operative tetanus to abdominal and gynaecological operations." Bulloch (Bulloch, Lampitt, and Bushill, 1929), on the other hand, in his classical work and with years of experience following his special study of the subject, after reviewing all evidence available, concludes: "There may be a suspicion against catgut. It remains for the present only a suspicion." Pulvertaft (1937), discussing catgut tetanus, says: "There are indeed

strong reasons to suppose that post-operative tetanus is due most often to other causes than catgut."

The preparation of catgut has for some years been carefully controlled. Kinloch (1929) states: "Now surgical catgut is scheduled under the Therapeutics Act the small but tragic group of post-operative deaths due to tetanus infection contracted from contaminated catgut will be in future prevented." Cases are, however, still reported, and many are not. I have notes of five cases which occurred in one hospital and which are as yet unrecorded.

While not denying that catgut may be a cause, it is reasonable to look elsewhere for probable causes, and, as the simplest method of infecting a wound is by direct infection, dressings that come into contact with wounds are open to suspicion. Pulvertaft (1937) points out that tetanus spores are everywhere: elaborating the work of Fildes, who isolated tetanus spores from cellulose wadding, he was able to demonstrate spores in sanitary towels made of cellulose-wool and cotton-wool. It would appear, for some as yet unexplained reason, that these types of dressing can contain tetanus spores. Cotton-wool is in constant use in surgical practice. It is usually cut from a roll into certain sizes, packed into a drum, and sterilized. Whether it is tightly packed or loosely packed depends upon the size of the sterilizer and the person who packs the drum. Usually when a small sterilizer is in use the drum is tightly packed. It is not generally known that if cotton-wool from a roll is placed in a warm place it will swell to three times its thickness. If, therefore, wool is cut and packed tightly into a drum it will swell when placed in the sterilizer and heated, and all spaces will be obliterated, preventing the easy penetration of steam. It will thus be seen that there is a considerable amount of evidence available to indicate causes for post-operative tetanus.

Sterilizers

For sterilization to be efficient a properly designed sterilizer is required. Perforated drums should be used, dressings should be carefully and loosely packed, and the temperature inside the drum must be controlled. It is essential that air be expelled from dressings and sterilizer. Hoyt, Chaney, and Cavell (1938) showed the following variations of temperature in an autoclave containing air:

	Part of Autoclave		
	Upper	Middle	Lower
10 lb. steam pressure, 115° C.; autoclave containing 25% air	114° C.	113° C.	108° C.
20 lb. steam pressure, 126° C.; autoclave containing 42% air	120° C.	119° C.	115° C.

Note.—42% air is present in an autoclave when no attempt has been made to evacuate air.

These experiments are of great importance for the appreciation of the principles on which efficient sterilization is based. When steam is admitted into a sterilizer containing air, the air, being approximately twice as heavy as steam, falls to the bottom and is heated slowly by conduction from the steam. If air is not removed the temperature of the steam will fall to a degree dependent on the position—the nearer the steam the lower the temperature—and if present in the dressings the penetrative efficiency of the steam will be reduced.

Underwood (1934) advocates a simple method of removing air from a sterilizer and dressings. A tap is fitted to the bottom of the sterilizer and is left slightly open whilst the steam pressure is being raised. The presence of air is indicated by a spluttering noise which ceases when all air has escaped, being replaced by a steady feathery escape of steam. The tap is so adjusted that a fine stream of steam escapes during the whole sterilizing process, so that air which is driven from the dressings can also escape. Underwood advises that a thermometer be inserted proximal to the tap in order that the temperature of the exhausted steam may be measured: he points out that if the temperature of the exhaust steam is equal to that of the steam inside the sterilizer and corresponds to that indicated on the gauge no air can be present. This simple accessory should be attached to all sterilizers.

There are many small sterilizers in use from which the air is evacuated from the *top*. I was asked to test such a type. The drums were packed with dressings sufficient for one abdominal operation. At 15 lb. pressure (121° C.) for 30 minutes and 20 lb. pressure (126° C.) for 10 minutes a temperature of 103° C. was not reached inside the centre of the drums. Such a temperature is useless for the sterilization of spores. As air is heavier than steam and must sink to the bottom it is obviously unsound to design a sterilizer with the air exit at the top.

Experiments were conducted to show whether tetanus spores were killed under varying conditions of sterilization. We used a vertical type sterilizer (kindly supplied by Down Bros.) fitted with a vacuum apparatus and steam-and-air exhaust cock at the bottom of the sterilizer. It accommodated two small perforated drums (5 in. by 11 in.) and one large drum (11 in. by 11 in.). Blotting-paper was soaked in the medium containing tetanus spores and placed in small Petri dishes. The dishes were put in the centre of the dressings to be tested.

Group A Experiments

The drums were packed with cotton-wool to an average capacity. No air was evacuated from the sterilizer. The steam pressure was raised to the requisite height and maintained for the experimental period.

Exp. No.	Steam Pressure per sq. in.	Duration of Sterilization	Position of Spores in Sterilizer	Size of Drum	Result
1	10 lb. 115° C.	20 min.	Upper	Small	+
			Lower	,,	+
2	,, ,,	30 ,,	Upper	,,	+
			Lower	,,	+
3	15 lb. 121° C.	20 ,,	Upper	,,	−
			Lower	,,	+
4	,, ,,	30 ,,	Upper	,,	−
			Lower	,,	+
5	20 lb. 126° C.	20 ,,	Upper	,,	−
			Middle	Large	+
			Lower	Small	−
6	,, ,,	30 ,,	Upper	,,	−
			Middle	Large	+
			Lower	Small	−

These experiments show that when air is not evacuated from the sterilizer tetanus spores are not uniformly destroyed. Experiments 3 and 4 clearly show the effect of air and confirm those of Hoyt, Chaney, and Cavell. Experiments 5 and 6 show how air delays the penetration of steam. The increase in the amount of dressings was sufficient to impose a barrier to penetration.

Group B Experiments

Dressing containers are advertised and used which contain no perforations. During sterilization the lids are raised in order to allow the ingress of steam. It has previously been shown that steam penetrates the dressings of such drums with the greatest difficulty. These experiments, though few in number, confirm previous findings.

Exp. No.	Steam Pressure per sq. in.	Duration of Sterilization	Position of Spores in Sterilizer	Size of Drum	Result
1	15 lb. 121° C.	20 min.	Lower	Small	+
2	,, ,,	30 ,,	Upper	,,	+
			Lower	,,	+
3	10 lb. 115° C.	20 ,,	,,	Large	+
4	,, ,,	30 ,,	,,	,,	+

In Experiments 3 and 4 air was extracted by a vacuum of 10 inches.

Previous experimental work has shown the unsuitability of unperforated drums (Hayes, 1937) as containers for sterile dressings even when conditions were favourable. The above experiments are too few to enable one to dogmatize, but, taken in conjunction with previous experiments, they indicate that an unperforated drum is dangerous.

Group C Experiments

These experiments were conducted under correct conditions—i.e., air was evacuated from the sterilizer by first creating a vacuum of 10 inches, after which the steam-and-air-escape cock situated at the bottom of the sterilizer was opened. Steam, plus air, escaped, and the pressure fell to zero. The cock was then closed and the pressure raised to that required for sterilization. The cock was now slightly opened so as to allow the discharge of a feathery stream of steam.

Exp. No.	Steam Pressure per sq. in.	Duration of Sterilization	Contents (Large Drum)	Position of Spores in Sterilizer	Result
1	10 lb. 115° C.	20 min.	Sheets	Upper	—
2	„ „	„	Cotton-wool	„	—
3	15 lb. 121° C.	„	Sheets	„	—
4	„ „	„	Cotton-wool	„	—
5	20 lb. 126° C.	„	Sheets	„	—
6	„ „	„	Cotton-wool	„	—

In Group C experiments the drums were tightly packed and of the largest size. The sterilizer was worked on correct principles. Spores were killed at as low a pressure as 10 lb., maintained for twenty minutes.

Although not exhaustive the experiments as a whole are striking and, it is hoped, will serve as a stimulus to others to work on similar lines and as a warning to those who use unsuitable types of sterilizers.

Summary

Experiments have been conducted to show that tetanus spores inserted into dressings are not killed when the technique of sterilization is imperfect.

As tetanus spores are present everywhere there is ample opportunity for dressings to become infected.

Many small sterilizers are not efficiently constructed, and from personal observation it can be stated that in many instances the methods used in preparing dressings for sterilization and the technique leave much to be desired.

Bacteriologists have shown that cotton-wool may contain tetanus spores.

It is reasonable to accept that post-operative tetanus may be caused through using dressings that are infected with tetanus spores and have been imperfectly sterilized.

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BIBLIOGRAPHY

Bulloch, W., Lampitt, L. H., and Bushill, J. H. (1929). Med. Res. Cncl. Rep., No. 138, London.
Fildes, P. (1929). *System of Bacteriology*, **3**, 319, London.
Hayes, S. N. (1937). *British Medical Journal*, **1**, 911.
Hoyt, A., Chaney, A. L., and Cavell, K. (1938). *J. Bact.*, **36**, 640.
Kinloch, J. P. (1929). Prefatory note to Report to Scottish Board of Health, Edinburgh.
Mackie, T. J. (1928). *Inquiry into Post-operative Tetanus*. Report to Scottish Board of Health, Edinburgh.
—— McLachlan, D. G. S., and Anderson, E. J. M. (1929). Report to Scottish Board of Health, Edinburgh.
Pulvertaft, R. J. V. (1937). *British Medical Journal*, **1**, 441.
Underwood, W. B. (1934). *Text Book of Sterilization*, Erie, Pa.
Wainright, J. M. (1926). *Arch. Surg.*, Chicago, **12**, 1062.

C. Petrillo (*J. Pediat.*, 1940, **17**, 378) places on record the case of a female infant in whom a piece of wire was retained in the heart for at least twenty-nine months and in the lung for at least four more months, and then was coughed up in a blood clot. The symptoms were those of post-pneumonic myocarditis with cardiac failure and passive congestion. The portal of entry was probably the oesophagus.

LACTATION AND BREAST FEEDING*

BY

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Breast milk is the most suitable food for the infant, and natural feeding, from the viewpoint of both mother and child, is the best method of administration. The chief advantages of natural over artificial feeding depend upon the facts that human milk has a composition and a physical character which are best suited to the needs of the infant, it is easily digested, it contains vitamins and immune bodies, and, being taken direct from its source, it is practically sterile and at the proper temperature for drinking. The breast-fed child therefore thrives better, is less likely to have digestive upsets, and is more resistant and less often exposed to infection than the bottle-fed. Further, breast feeding is simpler and cheaper than feeding by substitutes, and, involution of the maternal pelvic organs being assisted by suckling and mammary function being normal, the mother may be expected to have a more straightforward period of convalescence from her confinement when she feeds her baby in the natural way.

In spite of the many advantages of breast feeding it is occasionally found to be inadvisable or impossible, as when any of the undermentioned conditions exist:

1. Severe maternal illness, as puerperal sepsis, active tuberculosis, or pneumonia, during lactation.

2. Breast infection, as mastitis or severely fissured nipple. In the latter case weaning should be temporary, the baby being put back to the breast as soon as the nipple recovers.

3. Puerperal insanity. As an insane woman may attempt to harm her child she cannot be trusted to nurse it.

4. Pregnancy starting during lactation.

5. Absence of milk, which precludes the possibility of breast feeding.

Mechanism of Lactation

In order that efforts to control lactation may be placed on a rational basis it is necessary that the more important factors concerned with breast development and function should be understood.

The ovarian hormone, oestrin, which passes into the blood stream in large quantities throughout pregnancy, is responsible for increased vascularity and hypertrophy of the breast, its milk ducts, and its glandular tissue. The corpus luteum hormone, progestin, secreted during the same period, brings about further differentiation of the glandular structure, with acinar formation (Folley, Guthkelch, and Zuckerman, 1938). Both of these hormones, and more especially oestrin, have a powerful inhibitory effect on lactation, probably acting chiefly through the anterior pituitary gland (Wenner and Joël, 1939). Thus during pregnancy the breasts are hypertrophied and their specialized glandular tissue is developed, but milk is not secreted.

After the child and secundines have been expelled from the uterus oestrin and progestin are withdrawn, the blood hormone level falls rapidly, and the inhibitory action of these hormones on the anterior pituitary gland and on the breasts is removed. Prolactin, the lactotrophic fraction of the anterior pituitary secretion, is now passed into the blood stream and the breasts are stimulated by this hormone to produce true milk. In this action it may be

* Being part of a clinical lecture delivered at the School of Medicine, Newcastle-upon-Tyne, on October 5, 1940.

assisted by the so-called thyrotrophic fraction of the same secretion, which may also have lactogenic properties (Folley and Young, 1938), and by vitamin E, which probably has an effect on the anterior pituitary gland antagonistic to oestrin and therefore favourable to lactation. Lactation is maintained by the continued action of prolactin aided by the sucking reflex. The latter is of considerable importance, and milk production may be expected to diminish, and ultimately to cease, unless the breasts are frequently and completely exhausted.

Finally, good general health has a favourable effect on the secretion of breast milk; acute pyrexial illnesses, general ill health, and malnutrition have an adverse effect.

Ante-natal Routine

Efficient ante-natal care will do much to minimize the difficulties and increase the likelihood of breast feeding, and the mental attitude of the mother towards her child has a considerable influence upon the result obtained. It is the woman who is confidently determined to feed her baby from the breast and to continue her efforts until a satisfactory natural feeding routine is established, even at the expense of temporary discomfort or a curtailment of her freedom, who almost invariably makes the best mother, and this attitude should be supported with enthusiasm. The general health should be raised to the highest possible level by regular exercise in the open air, avoidance of fatigue or worry, sufficient sleep in a well-ventilated room, and a simple, mixed, and easily assimilated diet, including salads, green vegetables, pulses, fruit, wholemeal bread, milk, and dairy produce. Mixed vitamin preparations—of which pregnavite (Vitamins, Ltd.) is a suitable example—may be given with advantage as dietetic supplements, and if vitamin E is included lactation is more likely to be satisfactory (Shute, 1938).

A light uplifting adjustable brassière should be worn, but this must not constrict the breasts or compress the nipples. As the nipples are normally sensitive and this sensitivity is increased during pregnancy, discomfort may be experienced during the early days of suckling if they have not been prepared during the ante-natal period. They should be thoroughly washed twice daily and scales or encrustations around the orifices of the milk ducts carefully removed. After drying they should be briskly rubbed with a clean towel to toughen the skin, then smeared with lanolin or Nivea crème and gently manipulated by the fingers to stimulate their erectile tissue and counteract any tendency to depression. It is rarely necessary to draw out depressed nipples with a breast pump; this must be looked upon only as a temporary measure, to be discontinued as soon as digital manipulation is practicable. Neither methylated spirit nor eau-de-Cologne should be applied to the nipples under any circumstances, as these tend to produce a parchment-like surface skin which is liable to fissure during suckling.

Feeding Routine

After the confinement the breasts should be supported by a waterproof uplifting brassière and the nipples swabbed with boiled water or weak boric lotion before and after each feed. After drying they may be smeared with lanolin or Nivea crème to prevent adhesion to the dressing and to avoid softening and chafing due to contact with material moistened by the overflow of milk. They should then be covered by a dressing consisting of a small pad of cotton-wool wrapped in a piece of clean, soft, non-fluffy material such as lawn before the brassière is reapplied. So far as is possible the mother should avoid handling soiled napkins before feeding and should, of course, wash her hands before each feed is begun.

The baby may be put to the breast for the first time when the mother has rested after the delivery, and feeds may be offered six-hourly for the first two days and four-hourly on the third and subsequent days. On each of the first three days feeds should last approximately ten minutes, five minutes being allowed on each side and alternate breasts being used for the first part of each feed. After the third day, when secretion of true milk usually starts, they should be offered from alternate breasts, and should last from fifteen to thirty minutes each, an average time being twenty minutes. Sometimes the secretion of true milk may be delayed for several days, and when this occurs the child should be put to the breast at regular intervals until the supply is established. If the child is normal in size, obtains enough milk, and has an intelligent mother who may be relied upon to carry out a proper feeding routine and to report difficulties when not under the direct supervision of the doctor or nurse, continued four-hourly feeding is the method of choice, five feeds being offered daily. This gives greater freedom to the mother, more rest for mother and child, and a longer time for digestion of the feeds, with consequent increase of hunger and sucking power. If the child is small, has difficulty in getting enough milk, and has a less reliable mother, three-hourly feeding with six feeds daily is recommended until the weight of 10 lb. is attained. Night feeds are unnecessary for all but premature and certain ill babies, and the only supplements that may be required by the breast-fed baby are unsweetened boiled water (which should not be given during the hour preceding a feed), a vitamin A and D preparation, and diluted fruit juice rich in vitamin C.

The baby should be held in a convenient and comfortable position during suckling, care being taken to avoid nasal obstruction by the breast, and no feed should exceed forty minutes in duration. It should be encouraged to eructate wind during and after the feed, and should not be allowed to feed too quickly, to swallow air, or to sleep while on the breast. The mother should devote herself exclusively to the child, and should not attempt to sleep, read, or otherwise allow her attention to be diverted. Nothing should be permitted to distract the child at feed-times, and feeding should be carried out in a quiet room in the presence of the mother and nurse only.

After seven to ten days the child should be receiving 2½ oz. of breast milk, equivalent to about 50 calories, per pound of body weight and approximately one-sixth of its weight of fluid, including milk, daily. The intake of breast milk may be measured by weighing the child before and after a feed without change of clothing, the difference between the two weights representing the amount of milk imbibed. It is advisable to accept only figures obtained from test feeds over a period of twenty-four hours, as the quantity of milk taken may vary from feed to feed.

Underfeeding

Difficulty with breast feeding, causing underfeeding of the infant with dehydration, constipation, fretfulness, crying between feeds, voracious appetite at feed-times, and failure to put on weight, may result from any of the undermentioned conditions:

(A) Causes primarily affecting the Mother.—(1) Depressed nipples; (2) sore or fissured nipples; (3) inadequate secretion of milk; (4) improper feeding, the child being held in an unnatural attitude or its nose being obstructed by breast tissue.

(B) Causes primarily affecting the Child.—(1) Feebleness, as in prematurity; (2) mouth soreness, as in thrush or, less commonly, early teething; (3) sucking difficulties due to hare-lip, cleft palate, or tongue-tie; (4) nasal obstruction due to rhinitis.

If insufficient milk is being formed to meet the requirements of the child certain steps may be taken to encourage the breasts to secrete more (Hunter, 1936). It must first be confirmed by test weighing, followed by expression and measurement of the residual milk after each feed, that the fault is inadequate milk production and not incomplete emptying of the breasts. Milk may be most satisfactorily removed by supporting the breast, grasping the tissues behind and deep to the areola with the finger and thumb, and massaging the ampullae of the milk ducts towards the nipple. All milk obtained by breast massage should be given to the infant, and a "lazy" child may be encouraged to suck more vigorously by allowing more fresh air, handling correctly during feeding, keeping awake by gentle stimulation when necessary, touching the region of the hyoid bone occasionally to encourage swallowing, and giving half an ounce of half-normal saline solution half an hour before feeds two or, at most, three times daily to create thirst.

If the milk is deficient in quantity the health of the patient should be improved by fresh air, exercise, and general tonic treatment. The diet should be liberal, mixed, and easily digestible, and should include pulses, eggs, and dairy produce of all kinds; nuts, whole or ground, may be added if they do not cause indigestion (Hoobler, 1917). Enough rest should be insisted upon and every effort made to alleviate worry and pain. Excitement should be avoided, few visitors permitted, smoking forbidden, and dehydrating aperients replaced by mild laxatives. Sufficient fluid is allowed to prevent dehydration; but milk is a true secretion, not a transudate or filtrate, and will not be proportionately increased in amount when large quantities of fluid are imbibed. It is therefore sufficient to give a glass of water to the mother half an hour before each feed-time and one to one and a half pints of milk extra daily. A preparation of cotton-seed protein sold under the name of "lactagol" and shown to be a galactagogue (Harris, 1932) may be added to the milk, and malt extract may also be given with a view to improving the milk supply. Vitamin E has been found to have a beneficial effect upon lactation, and if it has not been taken during the later months of pregnancy a large initial dose of wheat-germ oil concentrate containing 30 mg. α-tochopherol (5 capsules viteolin) should be administered, followed by 12 mg. (2 capsules) daily until the milk supply improves, and then 6 mg. (1 capsule) every second day throughout the period of lactation. Commercial preparations of prolactin are now available and, although they must still be looked upon as immature products, may be injected with advantage when the milk supply begins to fail. It is possible that their efficiency might be enhanced by inclusion of the thyrotrophic fraction of the anterior pituitary secretion. Intramuscular injections of prolactin are given into the thigh on successive days, as follows: First and second days, 300 Riddle units (5 c.cm.) each; third and fourth days, 120 R. units (2 c.cm.) each; fifth day, 60 R. units (1 c.cm.) to complete the course.

Finally, the nurse and medical attendant should try to inculcate into their patient the desire to feed her baby on the breast and the determination to persevere in the effort. It is only when all attempts to obtain an adequate supply of breast milk fail that complementary feeding should be employed to compensate for the deficiency shown by test feeding. Supplementary feeding or complete replacement of certain breast feeds by artificial food is only permissible at the time of weaning, as it will certainly tend to reduce the supply of natural milk; and breast feeding should not be discontinued during the early weeks so long as a few ounces of milk can be obtained each day.

Inhibition of Lactation

Steps may be taken to stop the breast function after stillbirth or neonatal death, or when breast feeding is definitely contraindicated. The fluid intake by the mouth is temporarily reduced and a mild saline aperient is given to cause partial dehydration of the tissues, while the breasts are washed, carefully dried, powdered, padded with cotton-wool, and firmly bound, excessive constriction being avoided. Mild sedatives, such as bromides, aspirin, or phenacetin, may be given to ease mammary discomfort. If, however, this is so severe as to cause distress, the binder may be temporarily removed to allow part of the accumulated milk to be expressed; but complete exhaustion of the glands is to be avoided, as this might encourage further secretion. Fomentation and application of antiphlogistic preparations may increase milk secretion, oedema, and the risk of mastitis, especially if the nipple is softened by a slipped dressing, and therefore should be avoided. Oestrin, 3,000 units four times daily, or stilboestrol, 1 mg. three times daily, given by mouth for three to five days, has a powerful inhibitory effect on lactation and should be used in all cases in which the suppression of lactation is desired.

Summary

Breast feeding offers the child the best chances of survival and good health, and contraindications to natural feeding are few.

Breast development is brought about by the action of oestrin and progestin, and secretion of milk follows withdrawal of the ovarian hormones, the secretion of prolactin, and breast stimulation by the sucking reflex.

The general care of the patient and proper management of the breasts are of considerable importance during the ante-natal period as well as during suckling. Regular feeding and complete emptying of the breasts are essential, and test feeding is the most reliable index of breast function.

Deficiency of breast secretion should be treated by instituting a suitable feeding routine, improving the general health of the mother, and preventing excitement and worry so far as is possible. Smoking is prohibited, dehydrating aperients are avoided, and an adequate fluid intake is given. Both breasts may be used for each feed, and vitamin E and prolactin may be administered with advantage.

The mental attitude of the mother towards breast-feeding is most important, and she should be given every encouragement in her efforts to feed the child.

When suppression of lactation is desired the mother's fluid intake is reduced, the breasts are bound, and oestrin is given. Breast discomfort may be relieved by mild sedatives or partial emptying of the glands when necessary.

REFERENCES

Folley, S. J., Guthkelch, A. N., and Zuckerman, S. (1938). *Proc. roy. Soc.*, B, **126**, 469.
—— and Young, F. G. (1938). Ibid., **126**, 45.
Harris, H. A. (1932). *Med. Pr.*, **185**, 39.
Hoobler, B. R. (1917). *J. Amer. med. Ass.*, **69**, 421.
Hunter, W. (1936). *Practitioner*, **136**, 632.
Shute, E. (1938). *Amer. J. Obstet. Gynec.*, **35**, 810.
Wenner, R., and Joël, K. (1939). *Lancet*, **2**, 688.

A. R. Thompson (*Brit. J. Child. Dis.*, 1940, **37**, 166), who records an illustrative case, states that repeated tracheotomy for laryngeal diphtheria is exceedingly rare, as is shown by the fact that of eight cases recorded during the last sixty years only one, reported by J. D. Rolleston in 1931, has been fully authenticated. Thompson's case was that of a boy aged 2 in whom tracheotomy for purely laryngeal diphtheria was performed in November, 1937, and again in February, 1939. Cultures from the nose and throat on the first occasion and from the nose and tracheotomy wound on the second were positive. No complications occurred in either attack.

STERILIZATION OF BLOOD BANK BOTTLES

PRACTICAL HINTS

BY

G. E. O. WILLIAMS, M.D.

Merseyside War Blood Bank

The present increase in the use of stored plasma for the treatment of shock has drawn attention to the necessity for the most rigorous aseptic technique in handling and storing this product. Stored blood, by reason of its shorter "life," the need for its careful storage at low temperatures, and the phagocytic action of its leucocytes, is less liable to contamination. Plasma, on the other hand, has not only been deprived of the defences afforded by its cellular content but it is also apt to be stored for longer periods, and often at temperatures more conducive to bacterial growth. Moreover, the frequent presence of turbidity due to lipoids in unfiltered plasma and the gradual formation of granular deposits even in clear filtered plasma combine to make the detection of even gross contamination a difficult matter without resort to laboratory procedures, and consequently often lead to rejection.

Routine bacterial examination of the plasma prepared by the Merseyside War Blood Bank revealed in a number of the earlier samples the presence of contamination, particularly by spore-bearing bacilli of the *subtilis* group. This necessitated a careful review of the arrangements for the sterilization of bottles and other apparatus employed in the processing of plasma.

The Apparatus

The bottle used for storage of blood or plasma is of 560 c.cm. capacity, and is fitted with rubber diaphragm and perforated metal screw cap. As an internal filter a quantity of glass shot is included in each bottle. The plasma, which on standing separates from the cellular elements of whole blood, is withdrawn into its sterilized bottle by the "closed" method, using a short piece of rubber tubing fitted with needles, of suitable length and diameter, which are pushed through the holes in the metal cap and pierce the rubber diaphragm of each bottle. These decanting sets of rubber tubing with needles attached are sterilized by boiling immediately before use, and there is thus little opportunity of infection taking place during the process of plasma withdrawal, particularly as all the air admitted into the system passes through sterile filters of cotton-wool. It was therefore concluded that the source of the contamination observed was to be sought in the process of sterilizing the bottles.

The bottles are sterilized in a steam-operated hospital apparatus ordinarily used for the sterilization of dressings. The articles to be sterilized are exposed for twenty minutes to steam under positive pressure, and drying is effected by the application of a partial vacuum for a further period. Before the bottles are placed in the sterilizer their screw caps are covered by two thicknesses of grease-proof paper secured by an encircling rubber band, and the caps are screwed back one complete turn so as to break the airtight joint. The grease-proof paper is intended to prevent contamination of the cap of the bottle after sterilization, and after the bottle is removed from the sterilizer the screw is finally tightened. This is done while the bottle is still warm, and the vacuum produced on cooling is subsequently used in the filling process.

Objects Aimed At

The investigation of the efficiency of this method of sterilizing the bottles aimed at determining whether: (1) the temperature inside the bottle during sterilization was raised to that regarded as adequate; (2) the rise in temperature was maintained long enough; and (3) the condition produced actually destroyed both vegetative organisms and spores.

The first two questions were easily and satisfactorily answered by the use of sterilizer control tubes which were suspended inside the bottle and examined after the completion of the process. The control tubes used by us were of a well-known make, containing a red fluid which turned green after exposure to a temperature of 115° C. for twenty-five minutes or its bactericidal equivalent in time at higher or slightly lower temperatures.

The most satisfactory method of answering the third question was by observing the effect of our sterilizing process on bottles known to be contaminated. Bottles were therefore deliberately inoculated with various bacterial cultures: (1) with 5 c.cm. of a broth culture of *B. subtilis;* (2) with a dry smear from a slope culture of the same strain of organism; and (3) with a dry smear of *Staphylococcus citreus.* Bottles 1 and 3 were found to be efficiently sterilized, but the *B. subtilis* in Bottle 2 survived the sterilizing process. It was therefore concluded that the spores of this organism had escaped destruction because of the absence of sufficient moisture. The entrance of actual steam into the bottles is obviously not free or certain under the conditions of the experiment, as the rubber diaphragm inside the screw cap may sometimes be presumed to act as a valve.

Effect of Increased Alkalinity

To overcome this difficulty the citrate solution used as anticoagulant for the blood may be included in the bottle at the time of sterilization. We had, however, previously discontinued this practice on account of the increased rate of haemolysis resulting in blood collected in bottles so sterilized, and because the tests had shown that this haemolysis was due to the greatly increased alkalinity developing in the citrate autoclaved in the presence of the glass shot included as an internal filter. As it is the steam generated from the citrate solution within the bottle which kills the spores, recourse was had to including a small quantity of distilled water with the glass shot.

Experiment has shown that the optimum sterilizing effect is produced with as little as 4 c.cm. of water, and since the adoption of this procedure we have not again been troubled by contamination of the plasma withdrawn. The water added is practically all evaporated, and the small amount left is not sufficient to affect adversely the alkalinity or the concentration of the anticoagulant added at the time the blood is taken from the donor.

A further demonstration of the ill effects of the alkalinity produced by the heating of citrate solution in soft glass has recently been noted. Suspensions of red cells for grouping are collected in tubes containing citrate–saline solution. These tubes, some of which are required for the transport by post or by rail of cell suspensions from outlying centres, were formerly autoclaved to prevent bacterial growth. It was found, however, that red-cell suspensions in these alkaline tubes very soon haemolysed at room temperatures. To overcome this objection it has become necessary to omit the preliminary sterilization of the tubes and to risk the possibility of bacterial growth.

Summary

These simple observations on the sterilization of bottles, etc., used in blood banks are presented in the hope that they will particularly benefit those who, even as we did, have been taking for granted the efficiency of their autoclaves in producing bactericidal and spore-destroying conditions *inside* the numerous pint bottles necessary in a large blood bank, and who may have been experiencing similar difficulties in the preservation of blood.

Acknowledgments are due to Prof. T. B. Davie, Director of the Merseyside Blood Bank, for his helpful co-operation and permission to publish the above details.

Clinical Memoranda

Staphylococcal Septicaemia simulating Left Perinephric Abscess

The following case is interesting enough to be placed on record.

CASE REPORT

A soldier aged 24 was admitted to this hospital on the evening of July 1, 1940, with "acute left lumbago." Apart from enteric fever five years previously he had had no illnesses of note. His present disorder began twelve days before admission with acute pain in the left loin, radiating to the left thigh. There were no associated symptoms of trouble with micturition.

On admission he looked flushed and extremely ill. His temperature was 99.4°, pulse 104, and respirations 24. He was of good physique, his heart and chest were normal, and examination of the central nervous system disclosed nothing unusual. There was extreme tenderness over the left lumbar region behind, but no swelling. The left kidney was not palpable. A freshly voided specimen of urine was crystal-clear, with no abnormal constituents. A catheter specimen had a specific gravity of 1015, with neutral reaction, and gave no growth on culture. The patient was treated expectantly, and 1 oz. of mist. sod. sal. was given four-hourly for six doses, and then three times a day, with copious fluids, glucose, and fruit juices, etc. Pyrexia continued, and he had a severe attack of pain simulating left renal colic on July 3, for which 1/3 grain of morphine was necessary, and antiphlogistine was applied to the left loin and renewed every twelve hours.

On July 4 1 gramme of sulphanilamide four-hourly, for six doses, was given empirically. This did not seem to ease the pain or to make much difference to the pyrexia. He had a further attack of what appeared to be severe left renal colic on the 5th, for which morphine was again given. The pain became easier on the 6th, and the temperature showed signs of settling on the 7th, but rose again on the 8th, with aggravation of the loin pain. On July 9 the left perinephric region was carefully explored under local anaesthesia, but no pus was found. He was radiographed on the same day for ? perinephric abscess, ? renal calculus. The symptoms were very suggestive of perinephric abscess. A "straight" radiograph revealed no signs of calculus and there did not appear to be a psoas shadow on the left side: this suggested perinephric abscess, but there was no swelling at the back, and exploration was negative.

At the suggestion of Mr. J. B. Ferguson Wilson, consulting surgeon to this hospital, blood was taken for culture. Meanwhile the patient was given 1 gramme of sulphanilamide four-hourly for six doses and then thrice daily for four days. The temperature now began to subside, his general condition became much better, his appetite was improved, and he slept without the use of the usual soporific drugs.

Blood culture gave an abundant growth of *Staph. albus.* Progress was maintained, and on July 22 the patient's general condition was so satisfactory that he was allowed to get up daily. He was given the usual tonic treatment with intramuscular liver extract, intensive doses of inorganic iron by mouth and intramuscularly, and malt and oil. On August 15 he was discharged from hospital, and recommended for three weeks' leave before going back on active duty.

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Retroperitoneal Haemorrhage from Angioma of Kidney

The following is presented as an unusual case of acute abdomen.

CASE REPORT

A married woman aged 39 was admitted to hospital on June 29, 1940, complaining of an intermittent abdominal pain which first appeared about seven days previously, but which had become very much worse in the last twenty-four hours. The pain was generalized in the abdomen, with maximal intensity in the right upper part, whence it passed into the back. There was no history of any preceding illness, accident, or even undue exertion.

The bowels, which were usually regular, had not acted for two days. There was no frequency of micturition, but the patient had noticed that her intermittent abdominal pain sometimes came on after passing urine. She had never noticed blood in her urine. There had been no vomiting. She had two children, the younger being 8 years old. Her periods were regular, the last being fourteen days before admission. There was nothing else of any importance in the history.

The clinical findings as noted at the time were as follows. The temperature was 99°, pulse 80, and respirations 20. The patient was strikingly pale—suggesting internal haemorrhage. The abdomen showed limited respiratory excursion and slight general fullness. There was normal liver dullness; the spleen was not felt. In the right upper quadrant of the abdomen was a vaguely defined, smooth, rounded, very tender swelling, resonant anteriorly and not moving on respiration. It extended from the costal margin above (where it could not be felt as separate from the liver) to the level of the umbilicus below, and from the midline of the abdomen medially to the mid-axillary line laterally. Apparently the lump did not originate from the loins. Pelvic examination revealed no abnormality. The lungs were clinically normal. The urine was normal to chemical tests.

No definite diagnosis could be made, but there was a bias towards empyema of the gall-bladder. We could not, however, reconcile the signs of internal haemorrhage with any pre-operative diagnosis, and operation was undertaken for "acute abdomen."

A right upper paramedian incision was made and the hepatic flexure of the colon presented on a mass of retroperitoneal blood clot. The peritoneum was divided in the right paracolic gutter and reflected medially, so that the right kidney could be delivered and removed. The kidney proper was normal in size and shape, but its enlarged pelvis was filled by a solid tumour which had ruptured through the anterior wall of the pelvis. There were about two pints of coagulated blood behind the peritoneum, extending as far down as the pelvic brim. Most of this blood was removed, and drainage was established through the loin from the affected area.

Convalescence was complicated by bilateral femoral phlebitis plus infection of the residual blood clot, but the drainage proved adequate and a slow recovery followed. Microscopical examination of the specimen by Dr. W. A. Robb showed a simple angioma of the kidney pelvis.

My thanks are due to Mr. A. L. Candler, senior surgeon to the Royal Devon and Exeter Hospital, for allowing me to treat and to report this case.

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Reviews

HEALTH OF MUNITION WORKERS

The Health and Efficiency of Munition Workers. By H. M. Vernon, M.A., M.D. (Pp. 144. 8s. 6d. net.) London: Oxford University Press. 1940.

In conditions which in many respects resemble those of twenty-five years ago it is useful to have a reassembly of the evidence presented to the Health of Munition Workers Committee of the last war and the conclusions which it reached, together with later experience accumulated through the work of the Industrial Health Research Board (the inheritor of the committee), the National Institute of Industrial Psychology, and in other ways. Dr. H. M. Vernon writes with authority on this subject, as he was concerned in the earlier investigations under the old Ministry of Munitions. He has produced a handy volume, setting out with great clearness the facts about hours of work, rest pauses, the shift system, sickness and absenteeism, accidents and injuries, and other matters affecting the industrial worker.

It is interesting to be reminded of the particular attention which was paid to the health of women munition workers during the last war, of whom in 1917 there were nearly half a million in the metal industries alone. Of a large number of women examined about one-third showed some signs of fatigue and ill-health, chiefly frequent headache, disorders of menstruation, and "indigestion," from which vague complaint one-quarter of the women suffered. When their working hours were reduced from twelve to ten a day the frequency of medical cases greatly diminished. The women who had come for treatment for faintness nine times more often than the men now came only three times more often. Discussing time lost through accidents Dr. Vernon points out that there are about forty times as many uncompensated minor accidents as compensated major ones. His comments on accident-proneness and the special liability of young persons to incur accidents are apposite at a time when so much adaptation to unfamiliar processes is taking place.

In a final chapter he deals with the effect of the black-out on the ventilation and lighting of factories. His preface is dated August, 1940, and the book was compiled before the aerial bombardment of industrial centres introduced another complicating factor into the problem of health and working efficiency. The effect of the ubiquitous siren and of loss of sleep will provide material for future studies. In the meantime this book ought to be on the table of all concerned in labour management, and it should educate employers who might otherwise imagine that excessive hours of work and night-shifts for women were justifiable in the interests of national production and do not really imperil the health and efficiency of the worker.

WAR WOUNDS AND INJURIES

War Wounds and Injuries. Edited by E. Fletcher, M.A., M.B., M.R.C.P., and R. W. Raven, F.R.C.S. With a foreword by Lord Horder. Based on articles in the *Post-Graduate Medical Journal* (Fellowship of Medicine). (Pp. 262; illustrated. 14s. net.) London: Edward Arnold and Co.

This volume is a collected series of articles by some twenty-one authors which have already appeared in the *Post-Graduate Medical Journal*, with a foreword by Lord Horder and an introduction by Mr. H. S. Souttar. The space devoted to the different sections is somewhat uneven: thus fifty pages are given to injuries of the chest, while no articles appear on the general principles of wound treatment, on shock, fractures, or burns. As a whole the articles reflect views held at the end of the last war, and do not refer to experiences in Spain or during the recent campaign. The contribution on gas gangrene savours strongly of the library, while the author of that on tetanus does not appear to know that practically all members of the B.E.F. were inoculated with toxoid; his recommendations to inject anti-tetanus serum by all possible routes will not be generally accepted.

The long section on chest injuries requires careful reading and some weighing up of opposed opinions if a concrete picture is to be obtained. Mr. Roberts contributes a brief and pithy summary of the important points in the treatment of chest wounds. Mr. Sellors (p. 50) is of the opinion that conservative treatment of haemothorax leads to intense thickening of the pleura, diminished lung expansion, and restricted movements, but Dr. Alexander, from experience gained in the last war, does not believe this to be the case (p. 84), and hopes that "further appreciation of the facts will tend to limit unnecessary surgical treatment." The general opinion of the writers in this section is that all penetrating chest wounds should be submitted to operation. Many of those who had experience of such wounds in the last war will doubt whether the mortality rate or the incidence of complications would be reduced if such an ideal procedure were attempted under war conditions. The importance of the time factor in operations undertaken for injuries caused by missiles, especially wounds of the abdominal viscera, does not appear to be sufficiently stressed.

Mr. McMurray's useful contribution on the surgery of deformities draws attention to the frequency with which there is delayed or non-union of fractures from too much traction. This warning is timely, as the general use of skeletal traction has increased the incidence of these troubles. Mr. Harvey Jackson's statement that in war there are more head injuries than injuries to other parts of the body does not conform with the findings of those who have had experience of casualties in France or of casualties from air raids. The chapters on facio-maxillary injuries and injuries to the eyes are fully illustrated and give much interesting detail of treatment. It is a little difficult to assess the sphere of usefulness of this book. Some articles merit the attention of the practical surgeon; others offer good guidance to any doctor faced with the treatment of war injuries; while others might suitably grace a student's textbook.

THE SCIENCE OF COSMETICS

Modern Cosmeticology. The Principles and Practice of Modern Cosmetics. By Ralph G. Harry, F.I.C. (Pp. 288. $5.00 or 30s.) New York: Chemical Publishing Co., Inc.; London: Leonard Hill, Ltd. 1940.

Of late years increasing attention has been paid to the important borderland which lies between the provinces of the dermatologist and the beauty specialist's parlour. Several volumes have been published on the scientific side of cosmetics which should be found useful by medical men, while on the other hand, especially in America, physicians have written books on the cosmetic side of dermatology. The book now before us is perhaps the best which has yet appeared on the chemical and physical basis of the art of cosmetics. The author is evidently a highly skilled chemist, and he approaches the subject from a strictly scientific and experimental aspect. He is not content with giving a mere collection of formulae,

but attempts to provide so far as is possible a scientific basis for the diverse products of the cosmetic manufacturer. Where necessary he is refreshingly sceptical, and his chapters on "skin foods," on skin absorption and penetration, and the place of vitamins and hormones in cosmetic preparations for external use show a critical and judicial spirit which gives one confidence in the author's conclusions in other branches of the subject. Moreover, pointing out that the function of cosmetics is artistic and not therapeutic, he warns the purveyor of cosmetics of the dangers to which he subjects his clientele when he includes powerful therapeutic agents among the products he offers to his customers. Very rightly he quotes the disasters which have been caused by the employment of thallium as a depilatory and dinitrophenols as slimming agents.

One chapter which will be found very interesting is that on sunburn and sun-tan preparations. Medical practitioners are often asked to recommend something that will prevent sunburn, and they will find many useful hints in this chapter. A good deal of research has been done on this subject by the cosmetic chemists, and quite a number of compounds are recommended as screens against solar erythema. The best of them appear to be menthyl salicylate and menthyl anthranilate, and the author states that he has found the salicylate in 10% concentration to be efficient even under semi-tropical sunlight. These bodies are the foundations of many of the proprietary articles sold to prevent sunburn. The discovery of these bodies is not the only debt which the medical dermatologist owes to the cosmetic chemist. He has also provided various oil-in-water emulsions which for many purposes are far superior to the traditional greasy bases which we have long been accustomed to use, and Mumford has recently drawn attention to the ways in which the modern preparations show their superiority. These matters are also dealt with in the book now before us. In fact, it is worthy of study by all dermatologists, and many a general practitioner will also find it very useful. The worst thing about it is the title—"Cosmeticology." As Mr. A. P. Herbert would say—"What a word!"

WHAT TO EAT

Healthy Eating. By V. H. Mottram, M.A. (Pp. 126. 3s. net.) London, Toronto, Melbourne, and Sydney: Cassell and Co., Ltd. 1940.

Confronted with yet another "slim volume" aiming at instruction in how to improve our diets, with special reference to wartime conditions, the reviewer resists with some difficulty the instinct to say "What, again?" and write his notice in a vein of sated intolerance. In his more philosophic moments, however, he is at least entitled to inquire what special reasons justify the latest addition to the already swollen ranks of such books, and to tell readers of these reasons, if they exist. For once this presents no difficulty. Apart altogether from the fact that years of experience in the study and teaching of nutrition, and as many years of practice in its popular exposition, have given Prof. Mottram a status shared by few in this field, the particular volume before us has a charm and utility all its own. Restricted in its appeal, according to the author's own declaration, because he addresses himself primarily to the middle-class housewife, whose opportunities to improve or reform her family's nutrition should be limited neither by economic duress nor by inability to understand the simple basic facts of dietetics, this book nevertheless contains many a shrewd comment on fads and fallacies in dietary matters, and should prove of value, if only as a source of hints for sane propaganda, to physicians and professional dietitians alike. The author disarmingly confesses to having some fads of his own, but his wit and humanity must surely prevent their causing irritation even among the most scientifically strait-laced. A slight inconsistency may be noted between Prof. Mottram's view (pp. 6 and 7) that little can be done to improve fundamentally the diet of the present adult generation—excepting always the pregnant or nursing mother—and his general exordium (p. 39) to eat more protective foods. There seems to be a misunderstanding on page 61, for boiled cow's milk gives a curd almost indistinguishable from that of breast milk, as does reconstituted roller-dried milk; and there is a grammatical lapse—rarest of occurrences in Prof. Mottram's writing—on page 67.

The book is so free from flaws that these trivialities alone can be cited in any kind of critical sense. It is an expansion of the author's recent lecture at the Royal Institution, a summary of which was published in the *Journal* (July 13, p. 62), and has appeared *in extenso* with seven others in a volume entitled *The Nation's Larder* (Bell, 2s. 6d.). Few who read it will fail to learn something; fewer who follow its advice will fail to benefit therefrom.

A MEDICAL AUTOBIOGRAPHY

Fighting for Life. By S. Josephine Baker, M.D. (Pp. 287. 10s. 6d. net.) London: Robert Hale. 1940.

The title which Dr. S. Josephine Baker has given to her autobiography is not a very good one, for though to those who have read her book or know her work its relevance to that work will be apparent, yet it does not at once or adequately indicate the character of the book or the nature and wide interest of its contents. There have been a considerable number of medical autobiographies published of recent years. None of them can be said to fail entirely in interest, but they are of varied sorts. Some are mainly journalistic accounts of particular medical or surgical cases or incidents. Some of them mainly recount amazing and unbelievable occurrences, probably developed consciously or unconsciously from a basis of truth. In Dr. Josephine Baker's book there is none of this. It comes near to being just what a medical autobiography ought to be. Its writing was worth doing and is well done. It is not only of fascinating interest almost throughout, but it contains authentic information and profitable lessons to all readers who belong to the medical profession or who are concerned with public health and social welfare. It is principally a personal record of the initiation, development, and method of maternity and child welfare (including school medical services) in New York; but there are chapters dealing with the author's early life and professional education, with her part in the campaign for women's suffrage, and with a three-months visit to Soviet Russia. Throughout there are shown wise judgment, good sense, quiet humour, and well-selected anecdotes. Altogether it is an able, sagacious, and delightful book.

Notes on Books

In *Sex and Life* (Faber and Faber, Ltd., 18s. net) Dr. EUGEN STEINACH with the assistance of Dr. Josef Loebel gives a semi-popular account of his forty years of biological and medical researches. It is interesting to note that, in view of the great advances recently made on the chemical nature of the sex hormones, he is now of opinion that injections of synthetic male sex hormones produce results similar to those achieved by vaso-ligation. Moreover, such injections can be easily repeated whenever desired. A new point is the use of creatinuria as a test for hypogonadism (p. 270). In conclusion he holds out a prospect of "no land of eternal youth but one of bearable old age in which within natural limits the

most physiological conditions of life prevail"—a more modest claim than those sometimes advanced.

The British Bluejacket, 1915–1940, by A. TRYSTAN EDWARDS (Simpkin Marshall, Ltd., 2s. net) has the qualifying title of "A Social Study of the Royal Navy." It should be read by all who enter the Service, particularly those who, for "hostilities only," are suddenly transferred from shore routine to a life afloat—a life in which, as the author points out, there is a strong sense of comradeship such as seldom exists in civilian society. The reader may come to understand the Naval tradition of comradeship and disinterested service so well brought out in these pages, which to the young R.N.V.R. doctor will prove a valuable introduction to those who will constitute his patients, written by one who has himself served on the "lower deck" in both peace and war. Here the author pays high tribute to the "man-o'-warsman," whom he has studied under many and varying conditions. These pages will help the doctor new to the Service to understand its outlook and its customs.

In writing *Standard Radiographic Positions* (Baillière, Tindall and Cox, 6s. net) N. DAVIES and U. ISENBURG have intended to produce "a textbook of sufficiently elementary standard" to enable the student training as a radiographer "to obtain a working standard of the fundamental positions." In its 132 pages, including 100 diagrams, the authors have described some of the standard positions used in radiography—reasonably well in the skeleton and skull, but incompletely in the more complicated examinations of the internal organs of the chest and abdomen. For instance, no description is given of the commonly used erect positions in examining the chest and stomach, and it will be apparent that Fig. 42 is printed upside down. As there is no account in this book of preparation, kilovoltage, exposure times, or contrast-medium technique, those who use it in their training will also need another textbook giving these details. The value of this book would have been much greater if it had been comprehensive enough to make this unnecessary. As it stands, its scope is too limited to have a large appeal, but it may prove useful to some of the class for which it is written.

Preparations and Appliances

IMPROVED EXTENSION APPLIANCE FOR USE WITH THOMAS SPLINT

Dr. W. RUFUS G. HARRIS (Exeter) writes:

Prompt immobilization and the application of extension are essential in cases of limb fractures, particularly fractures of the femur. Where it is usual to employ the Thomas splint the simplest and quickest method is some form of spring extension which will give counter-extension on the tuber ischii. About twenty years ago I devised an extension appliance for use with the Thomas splint, which I believe has been employed in the treatment of fractured femur. Recently I have had this original appliance improved by incorporating adjustable U-shaped clips on its side wings so that it can be more securely fixed to an ordinary Thomas splint (Fig. 1). Its other features have been retained. For use with it I have had made a special canvas spat large enough to fit over the boot so that extension can at once be applied to cases of fractured limbs ready for transportation to hospital.

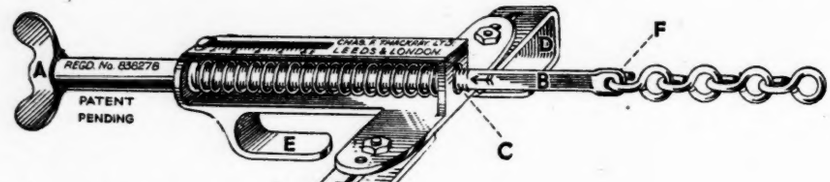

Fig. 1

Fig. 2

The apparatus is very simple. After selecting a splint of suitable ring size and length, the appliance is hooked over the end of the splint at E and the U-shaped clips D firmly pushed in to the splint sides to grip them firmly. The screw A must be unscrewed so that the rod B is withdrawn about 2 in. until the arrow on the rod shows at C. If the chain is then attached at F and hooked with tension to one of the swivels of the extension spat, extension can be applied gradually by turning the screw A in a clockwise direction until the desired degree is obtained as registered in lb. on the graduated scale. A maximum of 25 lb. is possible.

The appliance has its use also in treatment in those cases where the patient is on a Thomas splint and counter-extension and immobilization are desired. For these cases a spat of suitable size may be used over the foot, or webbing may be strapped to the lower part of the limb. The makers supply a small steel foot-plate with slots and with a hook attached. The webbing is threaded through the slots of this plate before strapping to the limb, and the chain of the appliance can then be fixed to the hook on the foot-plate to provide extension. When used in conjunction with a Thomas splint in the manner described it gives the decided advantage that the patient is not pinned down, also transportation to and from the *x*-ray room can be carried out without disturbing the fracture. It is suggested that the appliance in conjunction with the Thomas knee splint would be very useful in the first-aid treatment of air-raid casualties suffering from injuries to the lower limb, excluding the neighbourhood of the ankle-joint. The appliance and splint can be applied efficiently by any intelligent first-aider in forty-five seconds.

The appliance is manufactured by Messrs. Chas. F. Thackray, Ltd., 10, Park Street, Leeds, 1.

There is some evidence that the local application of vitamin A is useful in epithelial lesions of the cornea. The Crookes Laboratories have made available in handy form a series of ointments, ranging from a preparation of vitaminized halibut-liver oil to compound ointments containing this base with either atropine or yellow oxide of mercury, or both.

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DETOXICATION OF LEAD BY APPLES

The conception of detoxication of endogenous toxic products of metabolism, and of foreign substances entering the organism for therapeutic purposes, as additions to foodstuffs, or in the course of industrial exposure, is a complex one. Thus the changes wrought in the offending molecule do not always lead to a compound which is less toxic than the original one. Nor are the methods of detoxication used by different species the same. In the effort to detoxicate a foreign compound the organism may utilize constituents of its own tissues or products of its own metabolism to such an extent as to impair seriously its own needs of them, and so lead to secondary deficiencies. The organism is able, to a greater or less extent, to oxidize, reduce, hydroxylate, acetylate, conjugate with sulphuric or glycuronic acids, form mercapturic acids, condense with amino acids, in a bewildering variety of ways when presented with the problem of disposing of organic compounds. Except in the case of certain ammonium compounds the disposal of foreign inorganic compounds by the organism is restricted to methods of excretion, or to storage in a form which later allows of slow excretion.

The case of lead has been investigated extensively. Lead and its compounds enter the organism by the gut or the respiratory tract, and in the case of at least one organic derivative by the unbroken skin. Lead compounds entering by the gastro-intestinal tract are very largely excreted unabsorbed, but the gastric acid can render possible some absorption of compounds relatively insoluble in water. Lead absorbed from the gut must pass through the portal circulation and hence, in equal dosage, does not ordinarily attain toxic concentrations in the blood as rapidly as when it is absorbed through the respiratory tract or skin. When lead has reached the blood, by whatever route, the phenomena of lead intoxication begin to appear in greater or less measure. The disposal of the circulating lead may occur via the kidneys or by deposition in the bones and internal organs, and, to some extent, by excretion into the gut. Detoxication in the sense of producing a compound of lead which exerts a less noxious effect on the organism does not seem to occur; all that appears to happen is that more readily excreted or stored forms are produced. Nevertheless the possibility of detoxication in the usual sense is not entirely ruled out.

It is interesting to find in a recent publication by American workers[1] a reference to a suggestion, made over one hundred years ago by Braconnot, that chemical or physical combination of pectin with a heavy metal, such as lead, might diminish the toxicity of the latter. The recent observations of Eggers that glycuronates of lead and arsenic can be prepared, and of Holmes that vitamin C can protect against lead toxicity, also link the detoxication of lead with carbohydrate. Because the apple is a good source of uronic acid and also contains pectin and vitamin C, these American workers (Manville, Reithel, Yamada, Spencer, and Richardson) investigated its protective effect against lead toxicity in rats, guinea-pigs, and rabbits, keeping the animals on basal diets low in uronic acid and as low as possible in lead—that is, lead normally present in foods. The basal diets were, except in the case of the rats, low in calcium and phosphorus content. Lead was administered in the form of lead arsenate in very large doses: the rats received 10 mg., 20 mg., and 30 mg. lead arsenate daily in succeeding weeks; the guinea-pigs 10 mg. daily throughout; and the rabbits 10 mg. daily for a week and 20 mg. daily thereafter. The animals were divided into two equal groups, one receiving in addition to the lead a diet supplement of apple: rats 10 g. per day, guinea-pigs 15 g., and rabbits 30 g. The maximum periods of feeding were: rats thirty-three days, guinea-pigs eight days, rabbits twenty-six days. Although the numbers of animals used were small (ten rats, eight guinea-pigs, eight rabbits) the results are of considerable interest. Of the five rats receiving lead arsenate alone, all lost weight rapidly and died; whereas of the five receiving lead arsenate with apple added to the diet, two survived and were in such good condition that they gained weight rapidly when returned to the basal diet. Of the guinea-pigs, all those not receiving the apple supplement died, whereas of the four receiving apple three survived and gained weight rapidly when returned to the basal diet. The most striking result was undoubtedly obtained with the rabbits, of which all four receiving apple not only survived twenty-six days of dosing with lead arsenate, but showed no diminution of appetite or of food consumption and, in fact, gained weight. The four not receiving apple became ill and died. The protection obtained was thus in descending order, rabbit, guinea-pig, rat, and this is attributed by the authors to the greater ratio of apple to lead in the first two. Analyses of tissues for lead and arsenic showed that rats receiving apple as well as lead arsenate had more lead in all the tissues than those not receiving apple. The rabbits given apple had more lead in the kidneys and bone but less in the liver; the guinea-pigs with apple had less lead in all the tissues. The degree of deposition of lead in the tissues is not easy to understand or interpret, but it is at any rate suggestive that the rabbits on apple, all of which survived, had almost twice as much lead in the kidneys and six times as much in the bones as was found in these tissues in the rabbits on lead only. The latter, all of which died, had nearly five times as much in the liver. The manner in which apple supplement brought about protection is obscure. The authors suggest, alternatively, that the calcium content of apples may have played a part, that the presence of colloids led to a less soluble form of lead, or that the uronic acid content led to a less toxic and more readily excreted form of lead. These experiments were, however, complicated by the arsenic.

Considered as a report of preliminary experiments, this work is very suggestive, but repetition is, in our view, called for, using more animals and simpler compounds of lead. The interest in lead arsenate is, of course, that it is the compound of lead used for spraying

[1] *J. Industr. Hyg.*, 1940, **22**, 36.

fruit. The nature of the toxic action of lead, except, to some extent, as regards its action on the circulating blood, is not easy to understand. In the work under discussion the rapidity with which, as we have noted, the animals (rats and guinea-pigs) recovered weight on return to basal diet seems to point either to an effect of lead or appetite by virtue of its taste, or to a rapidly reversible toxic effect. Histological studies may help to define the latter possibility, and it may be worth while to determine what effects are produced on the gastro-intestinal secretions. For those concerned with the industrial problem of lead absorption this work will have much interest, particularly if it can be shown that the lead is prevented from exerting its toxic effects through the formation of a less toxic compound and that this occurs with inhaled as well as ingested lead. Apart from measures directed against lead absorption, the industrial medical officer is faced at first with the need to induce storage in the bones, and later carefully to de-lead the worker. Were it possible to get the lead into a fairly non-toxic form by some dietary supplement, de-leading the patient would be a less anxious task. Further, the effects of long-standing slight intoxication and storage—for example, cardiovascular and renal changes—might well be eliminated altogether.

EPIDEMIOLOGY OF TULARAEMIA

In 1911 in California an epizootic occurred among certain small rodents; from a ground squirrel, *Citellus beecheyi* Richardson, McCoy[1] isolated an organism, probably of the Brucella group, now known as *Bacterium tularense*. At that time it scarcely seemed probable that tularaemia, as the infection was called, would prove to be widely distributed, but it has since been found not only in America but in Europe, Asia, and North Africa. The disease, primarily an enzootic of small rodents, at times becomes epizootic and man may then be secondarily infected, while certain domestic animals such as the sheep, and game birds like the quail, may also be affected.

The epidemiology of tularaemia in Europe has recently been very fully discussed by Jusatz.[2] The first report of the disease in man came from Russia in 1926, although there is some evidence that it was present in the Astrakhan region as early as 1877. Since then at least nineteen outbreaks have been described in European Russia and many more in Siberia and even as far east as Japan (Ohara[3]). In Western Europe the first case was diagnosed in November, 1929, by Thjötta,[4] the patient being the local doctor of Telemark in Southern Norway. The disease is now known to be very widely distributed in Scandinavia, but, although cases have been recorded in large towns such as Oslo, the majority are seen in country districts in Sweden up to a latitude of 66° N. More recently outbreaks have been described in Czecho-Slovakia, Austria, European Turkey, and Asia Minor. The question arises whether the infection has spread in a south-easterly direction across Europe or whether it has long been an enzootic of rodents in these countries. The latter view seems the more probable, since a disease closely resembling tularaemia was observed by Austrian Army doctors in 1917 in the mountainous district on the frontiers of Austria and Italy.

In America the rodents chiefly affected are ground squirrels and the jack, cottontail, and snow-shoe rabbits—in reality hares; in Europe the hare, rabbit, lemming, water-rat, suslik, musk-rat, and field vole have been found infected. The "lemming disease," originally described in Norway in 1896, is almost certainly tularaemia. Infection may be transmitted directly or indirectly from animals to man, and in Scandinavia those chiefly affected are trappers, game dealers, cooks, and kitchenmaids—persons, that is to say, who handle or clean game. In Norway a woman developed the disease after being bitten by a cat which had fed on infected field voles. The commonest portal for the entry of infection is through an abrasion on the skin, though the organisms may also gain entrance through the conjunctival sac and possibly the nasopharyngeal mucosa. Indirect transmission is brought about through the agency of insects. Thus in America the ticks *Dermacentor andersoni* Stiles and *D. occidentalis* are frequent transmitters. Foshay,[5] who gives an exhaustive summary of the various clinical types and of the treatment with serum of 600 cases of tularaemia, mentions four patients who contracted the disease from dressing domestic chickens for the table. It is possible that the chickens were infected by the bite of *Haemaphysalis leporis-palustris*; this, the common rabbit tick of North America, is chiefly responsible for maintaining the disease in wild rabbits, but it occasionally becomes parasitic on gallinaceous birds. In Europe the horse-fly and, as Olin[6] has shown in Sweden, the mosquito *Aëdes cinereus* may act as vectors. Infected ticks have not yet been discovered in Scandinavia, where the majority of cases occur from July to October, the period when mosquitos are most prevalent. In South-Eastern Europe and Asia Minor epidemics usually take place from June to August. According to Jusatz, tularaemia appears in epidemic form only in areas where the average yearly rainfall is less than forty inches, but recently in America the injection of water from streams in endemic areas into susceptible animals has shown that water supplies may sometimes be contaminated.

[1] *Publ. Hlth. Bull.*, Wash., 1911, No. 43, 53.
[2] *Z. Hyg. InfektKr.*, 1939, **122**, 352.
[3] *Zbl. Bakt.* (Abt. 1, Orig.), 1930, **117**, 440.
[4] *Nord. med. Tidskr.*, 1930, **2**, 177.
[5] *Medicine*, 1940, **19**, 1.
[6] *Bull. Off. int. Hyg. publ.*, 1938, **30**, 2804.

DYSPEPSIA IN THE ARMY

Early in the war it became obvious that dyspepsia was a prominent cause of sickness in the B.E.F. and was responsible for invaliding troops to this country. The nature of this dyspepsia was, however, at first obscure. It was suggested that it represented a new entity comparable to effort syndrome, that it was due to an acute type of peptic ulceration, or that it was the result of breakdown of old-standing peptic ulceration under the conditions of active service. As the dyspeptic cases returned to this country it became clear that a high

proportion of them belonged to the third group. Attention was focused on the subject in the medical press. P. H. Willcox[1] reported that forty-one cases (23.5%) of 174 medical sick from a convoy of 238 admitted to an E.M.S. sector hospital were of gastro-duodenal disorder, and formed the largest group in the series. The majority of these were suffering from gastro-duodenal ulceration, with smaller groups of pylorospasm and unclassified dyspepsia. Morris[2] also recorded the radiological findings in a series of 500 officers and men examined at a military hospital since the outbreak of war. In almost half of these there was positive radiological evidence of peptic ulceration. In the current number of the *Journal* Payne and Newman present an interim report on an investigation of dyspepsia in the Army. This work was carried out under the auspices of the Royal College of Physicians, and with the co-operation of the Army authorities and the E.M.S. A sample of 287 dyspeptics from the B.E.F. and from this country was investigated in the sector and military hospitals, and these cases represent an unselected cross-section of the clinical material. During the period between the dispatch of the B.E.F. and April 29, 1940, 14.4% of all cases invalided to this country had a primary diagnosis of gastro-duodenal disease. The problem of dyspepsia was thus numerically an important one, even excluding the cases treated in the base hospitals in France.

Payne and Newman show that organic disease of the stomach or duodenum was present in 89% of the cases investigated, that this was almost entirely peptic ulceration, especially of the duodenum, and that of the ulcer cases 92% were old-standing and antedated the war. Minor and functional dyspepsias formed relatively small groups. There was a very close resemblance between the French and the English cases, but a slightly higher proportion of the less serious dyspepsias occurred among the troops in this country. The men investigated included large numbers of reservists, supplementary reservists, and A.M.P.C.s, but it was found that the age of onset in the ulcer cases was considerably earlier than is usually recognized. In the duodenal group no less than 40% had started before the age of 25. Most of the patients with ulcer had been living on a strict ulcer diet for years and working to almost full capacity in their civil occupations. The immediate cause of breakdown was dietetic and the result of the unaccustomed nature of the Army food. The breakdown in the patients from France was often the worst the man had experienced; vomiting was a characteristic feature, especially in the duodenal cases. There was a certain amount of criticism of the cooking in France during the early stages of the war, but it is pointed out that this came from men with abnormal digestions and that it occurred at a time when there was a shortage of trained cooks in the newly formed units. Evidence suggests that adequate medical examination would have kept many of these men out of the Army, even allowing for the keenness of the duodenal patient to do his bit. It may be noted that the teeth were defective as a chewing mechanism in 38% of the ulcer cases.

These investigations into dyspepsia in the Army have so far failed to throw any light on the aetiology of peptic ulceration, but they have shown that men with established ulcers cannot stand up to Army life or remain efficient soldiers in wartime. It seems clear from Payne and Newman's observations that peptic ulceration is the principal cause of continued dyspepsia, and that under war conditions this may lead to serious disability and invalidism. It is also possible that similar dyspeptic problems exist in the Navy and the Royal Air Force. It is highly questionable whether men with a prolonged history of organic dyspepsia, especially of peptic ulceration, should be allowed to join the fighting Services, as it is most unlikely that they will make efficient soldiers, sailors, or airmen under war conditions. On the other hand, these men may retain good working capacity and do useful work in their civilian jobs. Recruiting Boards should keep the dyspepsia problem in mind and when necessary seek information from the man's doctor or hospital. If a man breaks down with a persisting or a remitting dyspepsia thorough investigation is called for. If the history, signs, and special tests suggest that the breakdown is the result of organic disease, especially ulceration, then it is more than probable that he should be boarded out of the Service. If for any special reason or on account of a man's qualifications it is desirable to keep him in the Service, then his diet must be such as will enable him to work to reasonable capacity. But a dyspeptic soldier is a liability; a dyspeptic civilian, living under a careful regime, may well become an asset.

If treatment for established peptic ulceration is to be carried out under Service conditions, then it must be on the basis of an exact diagnosis; it should be just as thorough and prolonged as in peacetime, or even more so; and convalescence and subsequent dietetic care must be arranged. It cannot be expected that surgery will convert an ulcer patient into a *Blitzkrieg* soldier. The dyspeptic soldier is only too often looked on as a nuisance and as a probable malingerer, but this attitude of mind is unscientific and is bound to lead to inadequate treatment and to the retention of men useless from the military point of view. Malingering was almost non-existent in the cases recorded by Payne and Newman, but in view of the obvious possibilities which dyspepsia offers it is essential that the difficult or doubtful case should be handled by the expert gastro-enterologist and investigated by every known means at our disposal. All the evidence suggests that peptic ulceration has become much commoner since 1914–18, and it is certain that it can now be diagnosed with much greater accuracy. In the case of the Army it is clear that ulceration has given rise to a clinical problem of some magnitude. There can be little doubt that the highest standards of recruiting for the Services will pay in the long run. The lowering of standards is bound to burden the administrative machine, to lead to inefficiency, expense, and waste of man-power, and also to create problems in connexion with pensions. Scientific war demands and deserves scientific medicine, and this must start with recruiting. The Army still marches on its stomach, even though it travels in mechanized vehicles, and the dyspeptic passenger should be discouraged from taking part in the journey.

[1] *British Medical Journal*, 1940, **1**, 1008.
[2] Ibid., 1940, **2**, 235.

THE CHEMISTRY OF CHEESES

A precept of the Salerno School of Health was that "cheese is wholesome when it is given with a spare hand." The wholesome qualities of this foodstuff and whence they are derived were discussed by the Society of Public Analysts and the Food Group of the Society of Chemical Industry at a joint meeting on December 3. Prof. H. D. Kay, director of the National Institute for Research in Dairying, reminded the meeting that the cheese problem could not be settled apart from the milk problem; bad cheese, he said, could be made from good milk, but not good cheese from bad milk. Given milk of reasonable quality, the production of good cheese was an essay in biological and bacteriological chemistry. He described the processes of making the staple cheeses of this country, in particular Cheddar and Stilton, and gave particulars of recent experiments on assessment of the suitability of milk and the effect of different methods of high-temperature short-time pasteurization on cheese quality. It had been found that the percentage of ash, phosphorus, and calcium in different types of cheese (for example, Cheddar, Cheshire, Leicestershire, and Lancashire), in spite of differences of manufacture, was fairly constant, but in Stilton, in which the curd was allowed to remain in contact with the whey without pressing, much of the calcium leaked away, while a large proportion of such calcium as remained was present in the coat. Stilton, he said, was a luxury cheese, not the sort which it was preferable to make in wartime. The common varieties of wholemilk cheeses might be looked upon as one-third fat, one-third protein, and one-third moisture. In May and June, when cheese manufacture was at its height, milk was rich in vitamin A and carotene. Experiments were now in progress on the vitamin content of cheeses of known history in relation to the milk from which they were made, and the stability of the various vitamins during the ripening process was being observed. Cheddar, Cheshire, and Stilton, made both in winter and in summer, had been examined and determinations made from cheeses five months old, which showed that the vitamin A and carotene content, representing the fat in the cheese, remained constant for at least that period. With regard to vitamin B_1, cheese might be expected to contain about one-twentieth of the vitamin of the original milk. Cheese made in summer was far richer in vitamin A than winter cheese, and it also contained rather more vitamin B_1. Vitamin C was present in curd only, and disappeared within a few weeks of ripening, being absent from properly ripened cheese. The differences between one cheese and another, in Prof. Kay's opinion, were of little nutritive significance, but the important factor was persistence of the relatively unstable vitamin A. Another speaker, Miss E. R. Hiscox, dealt with the volatile acids in cheese. Flavour is closely linked with these acids, though they are not the only source of flavour. There was a very high volatile acid content in the Roquefort type of cheese (a soft rennet cheese made from the milk of sheep), while the Stilton group was lowest in this respect, and Cheddar was intermediate. The Roquefort cheese was made from an acid curd treated on the same lines as Cheddar, while Stilton was made from a sweet curd, although by the time it was vatted it was acid, and every encouragement was given to the lactic acid bacteria to develop early. The lower value of volatile acids in the Stilton probably had much to do with its more delicate and subtle flavour. The subject of enzymes in relation to cheese was expounded by Dr. J. G. Davies, who said that the chemical composition of the milk was a much more important factor than hygienic quality in the manufacture of good cheese. A skilled cheesemaker could make a good cheese with fairly dirty milk, whereas no cheesemaker could make good cheese with milk which was chemically unsound. The factors which affected the ripening of cheese were the inherent enzymes of the milk. The streptococci constituted the entire flora in a young cheese for about the first month, and after that these organisms died out and their places were taken by lactic acid bacilli, which not only broke down the protein, but contributed something to the volatile acids. He mentioned that the ripening of cheese made from pasteurized milk took only about half the time occupied by the ripening of cheese made from raw milk. Finally Dr. G. W. Scott-Blair dealt with the physical chemistry of cheese, in particular the application of rheology, which is the science of the deformation and flow of matter, to the investigation of this food product. The materials used in the dairying industry, he said, included every sort of rheological anomaly of behaviour, starting with whey which was almost like water and extending up to the Parmesan cheeses which were almost like bricks. The way in which cheese ripened depended on the sort of physical habitat in which the organisms found themselves, so that even such qualities as firmness and springiness were important.

TREATMENT OF STOMATITIS IN CHILDREN

The acute form of inflammation of the interior of the mouth in children may be a serious disease, with fever, severe general aches, pains, and prostration. Swelling, redness, and, later, shallow ulceration occur in the tongue, cheeks, lips, and often along the gum margins, with at times a foul odour. After a few days the child becomes acutely miserable, and has pain on eating, enlargement and tenderness of the glands in the neck, and a constant dribbling of saliva. Expert opinion differs on the aetiology of this malady, and C. H. Smith and H. B. Johnson[1] of New York, in a recent communication mainly devoted to treatment, are not convinced of the part commonly attributed to Vincent's organisms, and are equally dissatisfied with most of the local (or general) treatment advocated. "There is no established specific treatment for the disease"—a quotation from another paper—is typical of the outlook of most physicians. The recent advocacy of gentian violet for the treatment of stomatitis in children is severely criticized by Smith and Johnson: "We have never seen the slightest effect from gentian violet except the staining of the child's face and most of his environment." They found that in the dental profession chromic acid was often recommended. Prompt improvement in hospital and private patients suffering from gingivo-stomatitis was obtained with this substance and the authors now use it as a routine. The details of the treatment may be summarized as follows. If the patient is old enough he rinses his mouth with something to which he is accustomed, preceded by weak peroxide if there is much accumulation of sordes or sloughing material on the ulcerated areas. Several swabs of cotton-wool tightly wound on wood applicators are preferred. The gums and ulcers are carefully dried with a swab, and then another swab dipped in the chromic acid solution (5 to 7% in water) is applied directly to the ulcers and the inflamed edges of the gums, some of the solution being gently worked between the gums and the teeth. A small area only, not more than from one-third to one-half of the dental area, is treated at any one time, the treatment being applied twice a day for one to three days and then once a day. Between treatments the child can continue to use a mouthwash. The child should be kept in bed during the whole course of the malady, given a nightly laxative and a bland diet, such

[1] *J. Pediat.*, 1940, **17**, 1.

as bread and milk, cereals, gruels, and creamed soups, with a gradual return to normal as the gums improve and the fever goes. It is claimed that the chromic acid has an analgesic effect, so that not only does the child put up no more resistance than is likely according to his age for any form of local application, but for several hours after chromic acid has been applied he can eat with comfort. Though the duration of the illness does not appear to be much shortened, as shown in a comparison of cases treated by this method and by others, nevertheless it is claimed that the duration of the disease after treatment is begun is about two days less with the chromic acid method. There is definitely a more rapid immediate improvement, and relief of pain on eating. There appears to be no danger of any caustic effect from this treatment, or of gum atrophy.

CALCIUM AND PHOSPHORUS IN THE DEVELOPMENT OF RICKETS

The rickets-producing action of cereals has been ascribed by Bruce and Callow[1] to the unavailability of the phosphorus in the phytic acid of the cereals. It has lately been ascribed by Harrison and Mellanby[2] to the precipitation of the calcium of the cereal and other parts of the diet by the phytic acid, after which it could not be absorbed. Bruce and Callow rectified their diets by adding inorganic phosphorus; Harrison and Mellanby rectified theirs by adding more calcium. This work was recently[3] reviewed in these columns. Krieger and others[4] have reinvestigated the question of the availability of phytic acid phosphorus. They prepared phytic acid by Boutwell's method,[5] and determined its organic and inorganic phosphorus by the method of Fiske and Subbarow.[6] To different groups of rats fed on a purified diet (containing no cereals) they gave graded doses of this preparation, and to a negative control group they gave a dose of inorganic phosphorus as large as that unavoidably given to the group receiving the largest dose of phytic acid. All these rats were given a reasonably large dose of vitamin D. The effect of the phytic acid was measured by the weight and percentage ash of the femora, the width of the metaphyses of the ulnae and radii, and the calcium and phosphorus content of the blood. Other groups of rats were given (*a*) no phytic acid or vitamin D, (*b*) a medium amount of phytic acid but no vitamin D, and (*c*) an optimum dose of phytic acid but no vitamin D. From these and a similar series of experiments, and from a comparison of the effect of vitamin D on the utilization of organic (phytic acid) and inorganic phosphorus, it was concluded that the phosphorus of phytic acid was available to a certain extent even without vitamin D, but much more so when it was also given. Under no conditions was it as readily available as inorganic phosphorus. Krieger and others,[7] by using graded doses of calcium phytate and calcium carbonate in experiments similar to those on the utilization of phosphorus, have found that the calcium of these salts is equally utilizable and its availability equally enhanced by giving vitamin D. Moreover, the same workers[8] observe that the availability of phytic acid phosphorus was affected by the Ca:P ratio of the diet. With an optimal intake of phosphorus and a Ca:P ratio of 1, phytic acid phosphorus was almost as readily utilized as the inorganic form. With an increase in this ratio the availability of phytic acid phosphorus decreased, but that of inorganic phosphorus did not. Day[9] has found that citrates promote calcification when given with a cereal ration of high-calcium and low-phosphorus content, but not when given with a purified diet. Citrates had no effect on diets of moderate calcium and phosphorus content nor on those of low-calcium and high-phosphorus content, whether the diets contained cereals or not. It appears, therefore, that the whole story of the rickets-producing action of cereals has not yet been told.

[1] *Biochem. J.*, 1934, **23**, 517.
[2] Ibid., 1939, **33**, 1660.
[3] *British Medical Journal*, 1940, **2**, 292.
[4] *J. Nutrit.*, 1940, **20**, 7.
[5] *J. Amer. chem. Soc.*, 1917, **39**, 491.
[6] *J. biol. Chem.*, 1925, **63**, 375.
[7] *J. Nutrit.*, 1940, **20**, 15.
[8] Ibid., 125.

MEASUREMENT OF THE PERIPHERAL CIRCULATION

The basic principle of a new method of measuring peripheral blood flow recently described by B. Leibel[10] is that the intensity of the light passing through a finger or toe on which a beam is directed will vary with the volume of blood within the part, and will thus be a measure of the circulation through it. The emergent beam falls on a photo-electric cell, which converts any variation in the intensity of the light into a corresponding variation in an electric circuit. These electrical changes are amplified and then recorded with an electrocardiograph. The tracing obtained in a normal subject shows two waves to each heart-beat—a large systolic and a much smaller diastolic wave. In the individual subject the amplitude of the wave is proportional to the blood flow; moreover, if the light filtrate is standardized by a photometer, then records from different subjects are comparable quantitatively. Two practical applications of this method are described by Leibel: one is the measurement of the pulse velocity by superimposing the electrocardiogram on the tissue circulation record, and the other is the demonstration in a case of senile gangrene of increased blood flow in the affected toe for some hours after the application of the Paevex glass boot.

TUMOURS OF THE OPTIC NERVE AND RECKLINGHAUSEN'S DISEASE

Tumours of the optic nerve are rare, but the literature on them is extensive and deals mostly with the difficulties of histological classification. Davis,[11] in a study of five personally observed cases, supported by an exhaustive analysis of the literature, holds that the many different names that have been suggested represent not different varieties of tumours but different stages of fundamentally two types only: the relatively common glioma growing from the nerve tissue itself, and the much rarer endothelioma arising from the nerve sheath and corresponding to the intracranial meningiomata. In this classification the gliomata of the optic nerve represent true gliomatous tumours of a similar character to the gliomata of the brain—a view which breaks radically with the older teaching. Davis's own five cases showed associated lesions of Recklinghausen's neurofibromatosis, though these lesions were minimal, and he draws attention to thirty-two cases in the literature in which there was a similar association. He holds on both clinical and histological evidence that the true gliomata of the optic nerve must be regarded as part of Recklinghausen's disease. The difficulties, which are substantial, in accepting such a conception are that some gliomata of the optic nerve would have to be considered as the monosymptomatic form of a systemic disease, and that this monosymptomatic form tends to occur at an earlier age than the milder generalized form.

[9] *J. Nutrit.*, 1940, **20**, 157.
[10] *Brit. Heart J.*, 1940, **2**, 141.
[11] *Arch. Ophthal.*, Chicago, 1940, **23**, 735, 957.

CLOSED-PLASTER TREATMENT OF WOUNDS

During the war much interest has been expressed in the closed-plaster method of treating war wounds and fractures, and correspondents have recently drawn attention to the part played by Dr. Winnett Orr in introducing a method which was developed in the Spanish civil war by Dr. J. Trueta.

We are indebted to Prof. E. W. Hey Groves for permission to republish the following note which appeared with his article on "The Treatment of Open Infected Fractures" in the "British Journal of Surgery" for July, 1930 (p. 294). We print below the relevant part of Prof. Hey Groves's article.

The Use of Plaster-of-Paris

In a general way, and until quite recently, I have been accustomed to regard the routine use of plaster-of-Paris in the treatment of open fractures as unjustifiable either in theory or practice. But first by reading Dr. Winnett Orr's writings, and then by meeting him and discussing the matter with him and those who have used his methods, I have been so much impressed by the value of his work that I determined to bring his ideas before this association, and now fortunately we have been able to do even better and bring Dr. Winnett Orr himself to expound his own views. Dr. Winnett Orr's method consists in immediate cleansing of the wound, packing it with sterile vaseline gauze, leaving it wide open, and, having adjusted the fracture, putting up the limb in a plaster case which is not taken off or opened for several weeks unless there is a rise of temperature or other untoward symptoms appear.

I am quite convinced that this method is of great value in special cases, but am not at all clear yet whether it would be wise to suggest it as a routine treatment. Its outstanding merits are that it saves the patient a great deal of suffering and a prolonged stay in hospital. It appears to have three obvious dangers and drawbacks. It is a dangerous method to put into the hands of an inexperienced practitioner. If the wound has been sterilized at the first operation, the leaving a wide open wound to heal by granulation is much less ideal than closing it by delayed primary suture. And, thirdly, it must in many cases tend to make the correct alignment of the fracture faulty, because this has to be controlled by a plaster case, which must become loose as the swelling of the limb goes down. However, perhaps after we have heard Dr. Winnett Orr these objections may not seem to be so weighty.

Note of a Case of Infected Open Fracture treated by Dr. Winnett Orr

On May 3, before a number of Fellows of the Association of Surgeons at the Bristol General Hospital, Dr. Winnett Orr carried out the treatment of a case which had been under my care. I have been so much impressed with his method and its results in this case that I cannot do better than describe it.

Alfred S., aged 55, suffering from an open fracture of the right tibia and fibula caused by a fall from a roof on February 27, 1930.

He was treated by immediate toilet of the wound, which was sutured, and he was put up on a back splint and side-pieces. However, the suturing broke down and a chronic suppuration ensued. Later on the leg was slung on a cradle splint with pin traction from the calcaneum. After two months his condition had not undergone much change, and the *x*-ray showed some necrosis of both fragments of the tibia, with considerable overlapping. The wound was being dressed daily. The patient was in this condition when Dr. Orr saw him and operated upon him. He already had a pin through the os calcis. By means of this the foot was held firmly in the footpiece of a Hawley's table and sufficient traction applied to pull the leg out to a little more than its normal length.

Operation.—The wound was now excised and curetted. The overlapping bone fragments were chiselled away so as to leave a funnel-shaped cavity, leading down to the deep surface of the tibia. A few small necrosed fragments were removed. Although the bone had been drawn out to rather more than the full length, considerable lateral displacement still persisted. This was corrected and maintained by means of a long transfixion pin which emerged obliquely from the front of the wound. The wound, which had bled very freely, was packed first with dry gauze, then with iodine, and after with spirit. The bleeding was thus controlled, and into the dry cavity gauze impregnated with vaseline was packed firmly until it reached the surface. Over the surface another vaseline pad was placed, and then a thin layer of cotton-wool. A long transfixion pin was passed through the crest of the tibia just below the tubercle. A plaster-of-Paris case was put on the leg so as to include the three transfixion pins, and extending to the lower third of the thigh. The patient was returned to bed upon an open-air balcony.

Subsequent Progress.—This very drastic treatment has been followed by a perfectly smooth recovery. The man had a certain amount of pain and rise of temperature for the few days following the operation. The pin which fixed the site of the fracture was removed after three weeks, and the other two pins a fortnight later. After the first week the plaster, which was deeply stained with blood, became rather odorous, and this continued all the time until its removal. The smell was not very objectionable in this case because the man was all the time on an open-air balcony, but it would have been much more unpleasant if he had been in a closed ward.

Eight weeks after it had been applied the plaster was cut off. The condition of the limb was very remarkable. All over the front of the leg was a mound of vaseline gauze mixed with stale blood and pus, and smelling very disagreeably. But on cleaning away the mess a small healthy granulating wound was found on which were a few minute bone fragments. The limb was re-sterilized, the wound covered with a vaseline pad and again put up in a plaster, below the knee but including the foot, for five weeks, the patient being allowed to walk with crutches. The *x*-ray showed that union had taken place. The man is now (August 20, 1930) walking with side-irons from the knee to the shoe, and has good movement in both knee and ankle.

To me this case has afforded a most convincing demonstration of the value of Orr's method. It has made good the claim of its author of greatly simplifying the after-treatment. During thirteen weeks the patient was dressed only twice instead of the ninety-one times which the general routine of a daily dressing would have involved. But much more than this, the limb was restored to its full length with good alignment even in a case in which primary treatment had failed and chronic sepsis had been firmly established.

[The article was accompanied by illustrations which it is not possible to reproduce here.]

Note by Prof. Hey Groves, 1940

My first introduction to Dr. Trueta came about by my receiving a letter from Dr. Winnett Orr enclosing a letter which he had received from Dr. Trueta. The latter had written to Orr gratefully acknowledging the value of

Orr's work and complaining that it was not well received by British surgeons. Winnett Orr asked me if I could do anything to put this right. I did so, first by suggesting that Dr. Trueta should have an opportunity of meeting a representative gathering of the E.M.S. This took place at the Royal Society of Medicine, with Sir Cuthbert Wallace in the chair. And, further, I wrote an introduction to Dr. Trueta's book, in which I referred to the method employed by him as having been originated by Winnett Orr.

It is quite true to say that Böhler's method of treating open fractures appears to be the very opposite to that of Winnett Orr, but both methods have two important points in common—namely, immobilization and an avoidance of any dressings. Böhler uses traction and leaves the wound with no covering, a basin being placed under the limb into which the pus drips. Quite apart from matters of principle, it must be obvious that Böhler's method is much more difficult to carry out, as it requires hospitalization and is not adapted for transport.

THE SHELTER PROBLEM IN THE EAST END

From the survey of London shelters published last week (p. 796) the East End shelters were expressly omitted, the conditions in the East End being so dissimilar from those obtaining in the rest of London as to require separate treatment. A number of East End shelters were visited unofficially by our investigator, but two local authorities refused a request for facilities for an investigation, and a third ignored it. This negative attitude is in striking contrast to that of the other boroughs visited in Central, West, and North London, where in every case the most willing co-operation was shown. The conditions of such East End shelters as were visited left very much indeed to be desired, and strongly suggested that local government had failed in this unexampled emergency. Admittedly the East End has had an exceptional problem to face with its immense population from multitudes of small houses. Moreover, it has few big solid buildings, like those in the City and Westminster, where proper basement shelters can be constructed. But that is no excuse for neglect to make as comfortable and healthy as possible such shelter accommodation as is at hand.

At one very large shelter holding many thousands of people whatever amenity it possessed at the time of our visit seemed to have been afforded by voluntary effort. The shelter was badly lighted, the shelterers for the most part had to sleep on the rough ground, the sanitary arrangements were deplorable, and the whole atmosphere so damp and cold that one shuddered to imagine what the conditions would be like in a London fog. In two smaller shelters, one of them a reinforced cellar, the authority had overlaid the dampcourse with concrete, with the result that the damp, instead of being controlled, was creeping up the walls of the shelter. There were no first-aid equipment here and no visiting nurse; in the event of minor casualty or illness the marshal had to send to the nearest wardens' post. The sanitary arrangements here again were extremely primitive, and the shelterers themselves were responsible for the cleaning. The worst "shelter" of all seen in the East End was discovered under some railway arches, each arch accommodating from seventy to one hundred people. Here the only lavatory accommodation was a couple of buckets for the women; the men had to manage outside. There was not a single water tap under the whole of the arches; if the shelterers wanted a drink of water they had to bring it with them. The lighting also was very poor, the people supplementing it from candles. In wet weather the water percolated all over this shelter, and there was not a dry spot. The only help afforded was by the students of the London Hospital, who come every night to give whatever assistance they can, and by a local vicar who distributes cups of cocoa.

If the shelter "dictator" whom we suggested in our last issue is appointed he should make his way with all haste east of Aldgate. It is fortunate for the East End that evacuation has taken place there to a much greater extent than from the rest of London. We were informed of areas from which half the population has gone. Moreover, many of the people who make a nightly dormitory of the Tube stations further west (where there is light, warmth, and some nursing attendance, though the bunks are slow in coming and the stinking lavatories slow in being replaced) are East-Enders, who have travelled anything up to five miles to sleep. In the East End shelters there is, fortunately, a relative absence of children and of mothers with young children. But it needs to be borne in mind how vital is this area at the gate of dockland, where many of the men find their work, and amid factories where large numbers of the women are employed, a considerable proportion of whom, both men and women, find in the shelters at present their only home.

THE MEDICAL RESEARCH COUNCIL OF IRELAND

The Medical Research Council of Ireland has made the following awards: Mr. John Breen, whole-time grant for one year from January 1, 1941, to undertake an investigation of the organo-metallic compounds of calcium, magnesium, and potassium in living organisms—a study of their possible isolation and constitution; and to assist in the study of the intimate structure of cell membrane and of the manner in which calcium and magnesium gain admission and the special purposes they may serve. The work is to be carried out in the biochemistry department, University College, Dublin, under the direction of Prof. E. J. Conway. Dr. William Hayes, part-time grant for six months from January 1, 1941, to undertake an investigation to devise a simple, rapid, and accurate method for grouping haemolytic streptococci, the work to be carried out in the School of Pathology, Trinity College, Dublin, under the direction of Dr. R. A. Q. O'Meara. Dr. J. D. H. Widdess, grant-in-aid to enable him to employ a technician to carry out the serial sectioning of blocks.

Whole-time grants have been renewed for further periods as follows: Mr. R. P. Cooke, six months; Mr. P. J. Boyle, one year; Dr. T. G. Brady, one year; and Miss E. M. Mason, one year.

Part-time grants renewed are: Dr. Oliver FitzGerald, one year; Mr. Martin G. A. Little, one year; and Dr. D. K. O'Donovan, one year.

The grant-in-aid awarded to Prof. J. F. Donegan has been renewed for one year, as has that awarded to Dr. N. Falkiner.

Dr. R. A. Q. O'Meara relinquishes his whole-time grant as from November 1, 1940, and a grant-in-aid has been awarded him for one year.

The latest annual report of the medical services of Sierra Leone, presented to the Colonial Office by Dr. W. P. H. Lightbody, who was recently promoted director of the services, records a satisfactory state of general health among a population of some 100,000 and an absence of major epidemics. Nutrition in the undisturbed tribal communities is described as fairly satisfactory, but in Freetown, the capital, with its population of 55,000, and the adjacent villages there is some evidence of qualitative defects in diet, mainly an insufficiency of protein. Tables are given showing the health of Europeans. Among the 250 European officials resident the average annual sick time per resident was 6.46 days, almost exactly the same as that of the 1,000 African officials. Three European officials were invalided home during the year. Among the 495 European non-officials resident, the total number who were on sick leave was seventy-three. Three European officials and ten residents who were not officials were invalided home. The most frequent cause of death among the population in Freetown is malaria, which causes nearly twice as many deaths as tuberculosis, the second largest cause of mortality. Malaria also accounts for 43 per cent. of the hospital cases in the colony.

Reports of Societies

CHEST INJURIES

At a meeting of the Section of Surgery of the Royal Society of Medicine on December 4, with Mr. J. B. HUNTER in the chair, the subject for discussion was chest injuries.

Surgical Indications and Procedure

Mr. C. PRICE THOMAS said that chest wounds were second only to abdominal as a cause of death among the wounded, and next only to head wounds among those who were found dead before medical aid could be given. The gravity of these wounds was explained by interference with the cardio-respiratory reserve as a result of such conditions as open pneumothorax and tension pneumo- and haemo-thorax. In dealing with these cases the above-mentioned factors, in conjunction with those common to wounds in other situations, such as shock and haemorrhage, must be taken into account. An accurate history, complete examination of the patient, and *x*-ray films, both antero-posterior and lateral, were essential before any treatment other than anti-shock measures was undertaken. Operative intervention when indicated should be carried out within six hours of the infliction of the wound, save in exceptional circumstances. Primary operation should be performed on the following: (1) open "sucking wounds," (2) haemorrhage which was overt and progressive, (3) haemothorax with a retained foreign body, (4) haemothorax where there was reason to suppose that other structures than lung had been injured, such as pericardium or diaphragm, and (5) haemothorax with massive clot. Contraindications to operation were: (1) through-and-through wounds without haemothorax, and (2) haemothorax with through-and-through wounds which do not constitute "sucking wounds." Primary operation consisted of surgical revision of entrance and exit wounds and thoracotomy, with removal of the retained foreign body when present and accessible, or resection of lung if indicated. Other structures damaged, such as the diaphragm or pericardium, must also be adequately treated. Thoracotomy should be wide enough and suitably placed to give easy access to the whole pleural cavity. The revised wound might be utilized when extended, if suitably placed; otherwise a separate incision was made. The chest was drained through a separate stab wound and the thoracotomy wound sutured cleanly. Oxygen with a B.L.B. mask should be given freely before and after operation. Post-operative treatment required unremitting care and attention and was, at the present time, best carried out at a properly equipped centre.

Points in Diagnosis and Treatment

Dr. J. L. LIVINGSTONE said that internal injury might be present without any external wound, and the size of the entry wound was no guide. Wounds of the lower chest might be associated with sudden onset of abdominal rigidity. Clinical and radiological signs should localize so far as possible the suspected collection of fluid before the exploring needle was inserted. Sulphapyridine had been used for both prophylaxis and treatment. Apart from vomiting there had been no toxic reactions in his experience, but it was wise to withhold the drug until the effect of adequate drainage of pus was seen. Patients should be got out of bed as soon as possible so long as there was no toxaemia. The fact that there was a drainage tube in the chest need not keep the patient in bed. Special breathing exercises to promote expansion of the lungs were necessary. Infra-red rays for chronic wounds and diathermy for intrathoracic sepsis had their place. The speaker concluded with some observations on blast injuries of the lung. In the few cases observed it had been difficult to distinguish between the effects of blast alone and other effects such as compression of the chest by heavy weights or inhalation of blood or dust. In the cases seen in which it was thought that blast was the main factor, opacity was commonly in the posterior part of the right lower lobe or in the hilar region. Clinical features were tachycardia, slight loose cough, and occasionally stained sputum of short duration.

Wounds of the Chest Wall

Mr. NORMAN BARRETT said that all wounds except those which were small and uncomplicated should be excised if the patient was seen within a few hours of injury. Most surgeons were agreed that it was justifiable after early excision to close a wound only under very exceptional circumstances. These circumstances included a mature experience in the selection of cases, perfect technique, and good facilities for the work. In the case of the chest wall the same advice held good, with the exception that, in operating upon "sucking wounds" which had been excised, the surgeon must close the wound, taking the possible risk of sepsis in order to avoid the certain danger of open pneumothorax. If it had not been possible to do a thorough excision, suture of a "sucking wound" was not justifiable; it should be covered with a large pad and made airtight in that way. The most difficult wounds to excise thoroughly were those in which a missile had penetrated the scapula and damaged the muscles and ribs beneath it. The superficial part of the track could be cut out in the usual way, but to expose the subscapular muscles and ribs it might be necessary to make a separate incision, similar to the upper half of that used for thoracoplasty, and to lift the scapula off the chest wall.

The speaker went on to discuss the two main groups of wounds: those involving the superficial tissues, which were straightforward because their effects were limited to the chest wall; and those including fractures of the ribs and open pneumothorax, which were dangerous if the normal functions of heart and lungs were disturbed. In fractures the mechanical stability of the thoracic cage was often so impaired that a special element of risk entered on that account. The bones formed a series of hoops the strongest parts of which were the sternum and vertebral column, and for this reason crush injuries were more likely to break the ribs than the other bones, irrespective of where the force was applied. In children the chest wall was so flexible that it might transmit crushing forces to the internal organs without breaking the bones and without much sign of superficial trauma, but in adults this was not so likely to happen except in the lower part of the chest, where the diaphragm might be torn or the liver ruptured. One well-known indication for immobilizing a part of the chest was "paradoxical movement," a condition which occurred when a series of adjacent ribs had been fractured or removed surgically so that the chest wall was unsupported. In such cases the affected part did not move with the rest, but was sucked in during inspiration and blown out during expiration, causing dyspnoea and cyanosis because the cardiovascular system and the mechanics of respiration were disturbed. Treatment aimed at padding and strapping the unstable part so that it no longer moved.

As a general rule the pleural cavity should not be drained through a "sucking wound." With such drainage both healing of the wound and airtight drainage of the chest were prejudiced. If the wound was large and could not be closed by muscle or skin after excision, it must be covered and rendered airtight with a large pad of vaseline gauze and the pleural cavity drained as before. When infection was already established or probable, an open wound of the pleura must be left surgically open so that pus and exudates could escape, but be covered with airtight dressing. When the patient had overcome the secondary infection the "sucking wound" should be treated by secondary suture, an operation which could be undertaken in the presence of a properly drained empyema.

Multiple Rib Fractures

Dr. W. D. W. BROOKS referred to injuries in which multiple rib fractures had occurred and the chest wall had become mobile. The treatment usually prescribed was that of strapping the chest with packing. He had suggested the use of a Nuffield respirator for these cases. By this means the paradoxical movement of the chest wall would cease, and it was a method of overcoming the dyspnoea of which these patients so frequently complained. Investigation was being made into all cases of chest wounds in which large amounts of serum might be lost through a drainage tube, and in some the level of the blood proteins had in fact been found to be altered. The level was probably maintained up to a critical point and

then a relatively rapid fall took place. The treatment was simple provided serum could be obtained. An intravenous injection of serum was followed by a rise in blood proteins and disappearance of oedema.

Mr. R. C. BROCK said that Mr. Price Thomas's remark that radiographs should be taken in all these cases needed underlining. In seeing casualties one was often struck by the fact that radiography had been withheld because the patient was ill. Obviously there were occasions when it was not desirable to move the patient to be *x*-rayed, but these apart, radiography ought to be done first. One of the most important problems in dealing with chest wounds was that of time. It was not so much a question of surgery as of administration and organization. Many of these cases would not be accessible to expert surgery within a few hours. If the patient had a lacerated or contused wound of the chest wall it must be excised properly, but it did not follow that it must be sewn up tightly; this was quite wrong. Many people obviously shirked the problem of making or enlarging a hole in the pleura. Once the chest had been opened by a thoracotomy the pleura must be properly cleared out. Many of these patients received only a half-hearted pleural toilet. The lung itself was very tolerant of direct intervention.

Blast Injuries

Mr. J. E. H. ROBERTS said that a considerable number of cases of blast had now been studied, and the subject was becoming of great importance. Some of these cases did not develop any serious symptoms for forty-eight hours. The blast was in many cases a progressive lesion. Capillary bleeding into the lung went on for several days. Prof. Hadfield had had the opportunity now of carrying out post-mortem examinations in thirty-eight cases of blast, in some of which death had taken place immediately while in others there had been survival for several days. It was quite clear that the length of time after the blast injury before death occurred had no relation to the amount of haemorrhage into the lung. Some of these cases showed minute punctiform haemorrhages in the skin of the abdomen and chest. If such a condition, which was not very easily seen, was observed it might be assumed that the patient was suffering from blast until the contrary was proved. Some of the post-mortem examinations had shown the intercostal muscles to be infiltrated with blood. One patient, who subsequently died, was so excessively tender all over his chest wall that it was impossible to examine him thoroughly because of the intense pain caused by movement. The post-mortem examination showed the same condition of haemorrhage between the ribs. It was very likely that tenderness and rigidity of the abdominal wall were due to capillary haemorrhage into the muscles. Blast, therefore, should always be borne in mind in dealing with any batch of bomb-wounded people. No operation should be performed under a general anaesthetic until it was shown whether the blast of the lung was progressive. Blast had been overlooked in many cases because it was not suspected that it might be present. The addition of a general anaesthetic to the already existing lesion was not conducive to the recovery of the patient.

Anaesthetic Procedure

Dr. M. D. NOSWORTHY said that he had seen no ill effects whatever from the use of pentothal sodium, in spite of its sulphur content, in patients definitely blue from the presence of sulphapyridine, although on other grounds it might be contraindicated. Copious tracheo-bronchial secretion had seldom been a prominent feature in these cases, and in most he had used the pharyngeal airway. The statement that tracheotomy must be performed if blind intubation failed would not be supported. Aspiration of the tracheo-bronchial tree might be a life-saving procedure in any patient who was incapable of coughing up his bronchial secretions effectively—as, for example, in multiple rib fractures. Oxygen want of some degree was commonly present before operation, and the development of paradoxical respiration when the chest was opened might have fatal consequences as a result of the ever-increasing oxygen want. In practically all these war cases he had used controlled respiration during anaesthesia, employing the carbon dioxide absorption technique. With adequate oxygenation and efficient removal of carbon monoxide even very ill patients stood up to the ordeal and the surgeon's work inside the chest was made less difficult. In practically all these cases he had administered cyclopropane, which was non-toxic and had a short action, so that the patient woke up soon afterwards and could cough, and it allowed one to give a high percentage of oxygen during operation. It also allowed one to run controlled respiration very easily. All patients had morphine beforehand, and scopolamine, with or without an injection of pentothal, had been given. The only disadvantage of scopolamine was that it was explosive, and therefore diathermy could not be used when the surgeon was working on the lung; but he thought it safe to use diathermy when working on the chest wall, and when it came to working on the lung itself, usually the patients seemed so much better after cyclopropane that surgeons had preferred to go on without the diathermy. If the patient would "run on" nitrous oxide with only 20% oxygen one knew that he could go on breathing atmospheric air after the operation, and any signs of cyanosis gave an indication of what percentage of oxygen he would need post-operatively if he needed any at all.

Mr. PRICE THOMAS in reply still maintained that as a standard six hours after the injury was the ideal time to be aimed at for the primary operation, but exceptional circumstances might very well prevent such an ideal being reached. He stressed the need for removing foreign bodies, even if relatively small. Small bodies might cause a great deal of lung laceration. The "stove-in" chest was best treated conservatively by strapping.

CONGENITAL DISLOCATION OF HIP-JOINT

At a meeting of the Section of Orthopaedics of the Royal Society of Medicine on November 30 a paper was presented for Dr. FELIX BAUER of Vienna, who described himself as a "refugee from Nazi oppression," on congenital dislocation of the hip-joint.

Dr. Bauer said that this condition was common in Austria, and therefore considerable experience had been acquired in the treatment. At first the treatment advocated by Lorenz held the field, but from a study of the after-results a functional treatment seemed preferable. Lorenz and his school did not advocate starting plaster until after the first year of life on account of its adverse effect on the newborn child. The disadvantage of such methods was the extreme stiffness which followed prolonged immobilization due to contraction of the capsular ligament and muscle. Normal development of the hip depended upon correctness of position of the head of the femur and the function of the hip with free abduction. The best time to examine for under-development of the hip-joint was at the end of the first month of life. Many cases of osteo-arthritis occurring between the ages of 20 and 30 might have been avoided had this early examination been made. During the investigation of infants many cases had been found showing a condition of contracture of one or both heads, with diminished power of abduction, the child being noticed to move one hip less spontaneously than the other. *X*-ray examination in such cases would show an abnormality, with less advanced ossification of the centre of the head of the femur on one side. Only a small percentage of dislocations were present at birth, but dislocation commonly occurred during the first few months. Lorenz's method of treatment by fixation in plaster prevented normal function taking place, leading to under-nourishment of the head and atrophy of the muscles and ligaments. His own method consisted in reducing the hip-joint in the position of full flexion, using as little force as possible to avoid damage to the epiphysial region. The femoral head was lifted forward into the acetabulum from the back by a rotational movement, and after reduction the position of full flexion and abduction was maintained by means of a brace of cotton web (or, later on, of leather) and a stick tied with tape between the legs, keeping them strongly abducted. As a cinematograph film showed, the child learned to walk and to make other movements with a fair amount of freedom with this contrivance. The treatment lasted from five to eight months, and out of eighty-six joints to which it had been applied in fifty-six children complete recovery was noted in eighty-five.

Mr. K. H. PRIDIE, who presented Dr. Bauer's paper, described some cases of his own in which the method had been applied successfully. Mr. H. A. T. FAIRBANK said that it was now generally agreed that in infants these cases could be cured with a minimum of treatment. Maintenance of simple abduction was sufficient; it was not a question of reduction, but only of abducting so that the head became central instead of excentric. He felt that Dr. Bauer had been hardly fair to Lorenz. Functional use of the hip was one of Lorenz's principles. The plaster was admittedly heavier, but otherwise it was not disadvantageous. Dr. BAUER replied that Lorenz's method allowed for function of the knee and other parts, but not of the hip, which was completely immobilized.

Treatment of Burns

It had been proposed to have a short discussion at the same meeting on the treatment of burns, but time allowed for no more than the introduction of the subject by Mr. R. MOWLEM. He said that before any question of local treatment was considered it was necessary to deal with shock, which seemed to be associated with loss of fluid and blood plasma. He had found it preferable to use normal plasma. Although there might be a great amount of serum lost through the destroyed skin, there was not as much beneficial effect when the blood plasma was returned in its concentrated state as when it was returned in its normal diluted state. The best method of stopping the so-called toxic stage of secondary shock was by promoting the separation of the burnt tissue, so that the normal granulation layer might be established, and also by controlling or, what was better, preventing any infection of the area. For this purpose he had been using the sulphonamides. In first- and second-degree burns the whole treatment might be directed towards the avoidance of further damage and of infection, and the encouragement of new growth. For some cases of this class tannic acid did work extremely well; the only question was whether there was a method which would do better. It was extremely difficult to decide at first sight to what degree a burn belonged, and tannic acid, which might well be used on account of its simplicity in burns of first degree which did not involve an area near an orifice, did not give nearly such good results in third-degree burns. The immediate sequel of a burn was oedema. In most parts of the body this did not matter greatly, but in the hands it was of great importance. It could be avoided by using simple saline solutions, whereby the amount of oedema was controlled. If the hands were soaked in saline freely and the man encouraged to maintain whatever movement was possible he would not get necrosis of the terminal phalanges. The graft used for such hands was a split-skin graft, which epithelized the whole of the area.

ASPECTS OF SINUSITIS

A meeting of the Section of Laryngology of the Royal Society of Medicine was held on December 6, under the chairmanship of Mr. T. B. LAYTON, when "Aspects of Sinusitis" were discussed.

Mr. J. C. HOGG dealt with the treatment of chronic ethmoiditis by the transantral operation. He said that he had abandoned the intranasal method in favour of the transantral approach. Of 106 cases of sinusitis subjected to this operation which it had been possible to follow up, sixty-three were found to have healed clean noses, with consequent relief to their nasal symptoms; in twenty-eight residual infection was still present, necessitating occasional visits to hospital for minor procedures; in seven a frontal sinusitis did not resolve; and in eight some difficulty was encountered owing to stenosis. Experience over seven years showed that for well-established cases of ethmoiditis the transantral operation offered a very fair prospect of lasting cure.

Mr. E. C. BIRDSALL said that he had performed operations similar to those just described in about fifty cases, mostly advanced ethmoiditis with polypi. He thought that the frequently disappointing results of conservative surgery in ethmoiditis should lead to the consideration of more radical operations in the first instance. The last three cases he had done had been under local anaesthesia, and he had found the results very encouraging. Visual inspection of the ethmoid cells was at best a momentary affair under general anaesthesia, but under local anaesthesia one could view a large part of the ethmoid labyrinth.

Mr. W. I. DAGGETT said that he also had been disappointed with the intranasal approach. Even though the antrum was efficiently opened intranasally, intranasal ethmoidectomy was in only too many cases a very unsatisfactory operation. He was satisfied that the antral lining need not necessarily be removed, and therefore he advocated the external operation, with which he had had excellent results. He did not mind having to do a Caldwell-Luc operation later. It was an easy operation to carry out, and comparatively bloodless, particularly if the operation area was first injected with novocain.

Mr. T. B. LAYTON said that there were two kinds of sinusitis—one which produced a purulent and the other a polypoid reaction. It was the second which was under discussion that day. During the last year or so he had employed a new method of removing polypi. Instead of painting with cocaine inside the nose, he had blocked the second division of the fifth, and with this and no other anaesthesia he had removed the polypi from under the middle turbinal with far greater efficiency.

Mr. W. G. HOWARTH said that one type of sinusitis was amenable to the intranasal method, while in the other, a more advanced type, the intranasal operation had either not been done or had proved a failure. The reason why the intranasal operation was often a failure was probably because the orbital ethmoidal cells were not adequately removed, and there was an ascending infection from those cells which kept up the suppuration in the cavity above. His experience of the transantral operation was limited; he had given it up because in his hands it had not enabled him to reach the anterior cells from the frontal nasal duct. He had found the external ethmoidal operation gave the best approach.

Major GRAHAM, a member of the Canadian Army Medical Corps, said that all the operations he had performed by the transantral method had been carried out under local anaesthesia. A local anaesthetic was absolutely satisfactory, and had the advantage of lessening the bleeding. In the hospital in which he was stationed at present practically every operation was carried out with local anaesthesia.

Mr. R. J. CANN said that the intranasal operation did not afford an opportunity of efficiently dealing with the anterior cells or with those ethmoidal cells which wandered rather further afield. He preferred to tackle the polypi by the external route. Mr. LIONEL COLLEDGE said that polypi could often be more efficiently removed by using Tilley's forceps. The transantral operation was a very good method so far as it went; if it failed one could always fall back on the external operation. Mr. BEDFORD RUSSELL criticized the transantral operation as inadequate in the type of case which one would otherwise wish to approach in that way. Mr. D. F. A. NEILSON said that one could get a bloodless field of operation under general anaesthesia as much as under local, and he always used general anaesthesia because the patients preferred it. Mr. I. G. ROBIN questioned whether unsatisfactory results were due to failure to open up the sphenoid, as some had suggested. Mr. F. C. ORMEROD said that not in every case of ethmoiditis with polypi were these radical operations through the antrum and orbit and by other routes required. Some of the cases did well on removing the polypi, but there was a tendency to recurrence, and when that occurred very great improvement sometimes followed resection of the septum.

FUNGUS INFECTION OF THE FACE

At a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on November 1, with the president, Dr. R. H. MICKS, in the chair, Dr. M. DRUMMOND showed a case of fungus infection of the face.

A woman aged 60 had developed a small nodule under the left eyelid last August. Soon afterwards a number of papules appeared and changed into nodules, which spread in the form of a multiple granulomatous lesion with thick crusts, warty vegetations, discharging sinuses, and vascularity; in

places they appeared gummatous. A biopsy was performed, and a diagnosis of blastomycosis was made. Massive doses of potassium iodide and full skin doses of *x* rays were given. Dr. M. H. O'CONNOR, describing the histological picture, said the overlying epidermis was hypertrophic, with some keratinization; downgrowths with prickle cells projected into the corium and embraced small collections of inflammatory cells; the normal collagenous matrix had been absorbed, and a characteristic giant cell could be seen. Taken with the striking and predominant presence of a yeast-like organism the picture was convincing. The fungus was unicellular, and there was no evidence of hyphae or mycelium. About thirty types of this fungus had been described in association with pathological conditions in man. The rapid response to treatment for yeast infection confirmed the diagnosis.

CANCER OF THE CERVIX AND PREGNANCY

A meeting of the Section of Obstetrics of the Royal Academy of Medicine in Ireland was held on November 8, with the president, Dr. R. M. CORBET, in the chair.

Dr. A. H. DAVIDSON showed specimens from a case of carcinoma of the cervix obstructing labour in a woman of 40, admitted to the Rotunda Hospital for her thirteenth delivery. Previous deliveries had all been normal, and nothing had been discovered in the ante-natal department. On admission of the patient the foetal head was fixed in a face presentation, with the os admitting one finger, and the foetal heart was very irregular. Examination under anaesthesia confirmed the diagnosis of cancer; the infant was found to be dead, and was later removed through a lower-segment incision, a Wertheim being performed. After severe illness and two blood transfusions the patient did well. The sections showed squamous carcinoma with numerous mitoses. Dr. Davidson concluded by saying that an operation should first be performed in such cases, and that radium should be used only at a later stage.

Dr. J. F. CUNNINGHAM described two of his own cases. In the first, in which the patient was four months pregnant and had carcinoma of the cervix, radium treatment was administered, and was followed by abortion a week later. A Wertheim was then performed and she recovered, but died in a year. The second patient was eight months pregnant, and a Caesarean section had immediately preceded a supravaginal hysterectomy with removal of both ovaries; treatment with radium and deep *x* rays was then given. There were too few of these cases to say definitely which was the better treatment. Dr. A. H. DAVIDSON showed specimens from a case of ruptured uterus in a woman aged 40, whose first two pregnancies had been normal, but her third and fourth had been terminated by lower-segment Caesarean section. The fifth was a spontaneous delivery after nine hours of a baby weighing 6 lb. 9 oz. The sixth baby lay transversely, and after the patient had been ten hours in hospital the membranes ruptured suddenly. When Dr. Davidson saw her there was a large rupture of the posterior fornix. He removed a dead infant abdominally and performed a total hysterectomy. Recovery was complete.

The PRESIDENT said he noted with interest that the rupture had not occurred through the Caesarean scar. Adhesions in front of the uterus must have influenced the site, but he did not think that was the whole explanation, as there had been one spontaneous delivery since the last operation. The case emphasized that labours after Caesarean section should always be conducted in an institution. He had now seen twenty-seven cases of ruptured uterus: eleven had been delivered by Caesarean hysterectomy without a death; in eight the rent had been packed, and there had been three deaths; in three hysterectomy had been performed subsequent to packing, and there had been one death; one patient treated by repair of the rent had died; and four had had no treatment, and all of these died. Laparotomy should always be performed. Dr. G. C. DOCKERAY said that Dr. Davidson's last case had been one of polyneuritis of pregnancy, the patient's arms and legs being completely paralysed; *x*-ray examination showed tuberculous infiltration. She had left hospital after a year completely recovered, but had returned with severe biliary colic and had had her gall-bladder successfully removed.

Correspondence

R.M.B.F. Christmas Gifts Fund

SIR,—I thank those of your readers who have already responded to my Christmas gifts appeal. May I ask those who have not yet sent their contributions to do so as soon as possible to—Royal Medical Benevolent Fund Christmas Gifts, 1, Balliol House, Manor Fields, Putney, London, S.W.15.

We have never failed in recent years to show our sympathy by a gift at Christmas time to our many beneficiaries, and I am confident that every one of your readers will help us, but please send contributions now, however small. A little extra pleasure given this year will mean a great deal.—I am, etc.,

THOS. BARLOW,
President.

Nov. 29.

Influenza Epidemics

SIR,—Dr. Pickles has raised an interesting point. There have been epidemics of influenza, such as those of 1688 and 1693, which were *recorded* to have first appeared in these islands, but it is certainly true that in none of the nineteenth and twentieth century pandemics were we the first victims. Again, there is little doubt that two of the other pandemic diseases, plague and cholera, have always reached Europe by extension from Asia or Africa. But that is not so easy to prove for influenza. In his discussion of the 1918–19 pandemic, the late Dr. Bruce Low (*Report on the Pandemic of Influenza*, S.O., 1920, pp. 202 et seq.) pointed out the difficulty, amounting to impossibility, of following the spread from any one focus or group of related foci, although he seemed to approve an American view that the extension was from east to west and so to bring the pandemic into line with that of 1889–90. Clearly we should like to believe this for the reasons Dr. Pickles gives, and adoption of his practical suggestion may do good.

It is, however, well to consider an alternative hypothesis—namely, that epidemic influenza is not generated through a chain of infective persons linked up with some remote focal point but arises independently when the necessary local biological conditions are fulfilled. If that *were* so, we might expect to find that influenza does usually become epidemic in some remote area, simply because a general change (whether cosmic in Hamer's sense or simply demographic) would find suitable conditions earliest there. From the point of view of droplet infections the conditions of life in East Europe and Asia have been worse than those of West Europe for some centuries.

Hirsch (vol. i, p. 36) remarked that influenza "has not spread more quickly in our own times, with their multiplied and perfected ways and means of communication, than in former decades or centuries," and also roundly asserted (op. cit., p. 35) that "there is not the slightest cogent reason for supposing that the several parts of an influenza pandemic stand in a genetic relation to one another, or that it is a question of the conveyance of a disease-producing substance from place to place."

We know that Hirsch was wrong in his inference—namely, that influenza was not an infectious disease in the biological sense—but the facts from which he drew false conclusions are still facts. They can be reconciled with newer knowledge if we suppose that local foci of infection are, under certain conditions, readily formed and that spread does not take place by means of long infective chains extending over hundreds or thousands of miles but by many very short ones. The obvious weakness of the argument is the proviso "under certain conditions." *What* conditions? Of course, we must be on our guard against anthropomorphic reasoning. The miseries of that species so quaintly named *Homo sapiens* overshadow *our* sky but may be a very small item in the unknown total which adds up to pandemic influenza. But the state of our urban populations is unique, statistically speaking. There have indeed, to our shame, always been some thousands of people living under conditions not so much worse than those of our worst air-raid shelters; but these poor orphans of civilization,

as Simon called them, were semi-isolated groups. Now they are not. There have never been such opportunities for Nature to do experiments in herd epidemiology, and natural experiments are sometimes on a very large scale.—I am, etc.,

Loughton, Dec. 8. MAJOR GREENWOOD.

SIR,—I have read with great interest Prof. Major Greenwood's article (November 16, p. 677), and Dr. R. E. Hope Simpson's subsequent letter (November 30, p. 765). The suggestion submitted by Dr. Hope Simpson that we must look for something more than direct contact infection to explain the flame-like rapidity with which influenza spreads when it assumes pandemic form is supported by a study of the character of the principal epidemics of the disease in the past, and of the views expressed by epidemiologists. In *Principles and Practice of Preventive Medicine,* edited by the late Dr. C. W. Hutt and the writer, the possible explanation of the velocity of the spread in pandemic influenza is discussed, and reference is made to the possibility suggested by Dr. Hope Simpson.

Parsons, who made an exhaustive study of the pandemic of 1899–92, concluded that the disease was propagated chiefly by human contact, although he qualified this by stating that the contagion might propagate itself outside the human body. Crookshank has expressed the view that there is a relationship between influenza epidemics and cosmic influences, and Richter has stated that influenza pandemics depended on certain anticyclonic weather conditions for their development. Madsen, who has carefully investigated the seasonal incidence of disease in Denmark over a long period of years, inclines to the view that the seasonal fluctuation of disease is due to some seasonal alteration in the individual.

The continuity of influenza virus infection was postulated by the late Sir William Hamer. He considered that the infection was sustained by "precursors" and "trailers" represented by infections of the central nervous system before and after the main epidemic of influenza. Indeed, all the evidence at present available, and not least the flame-like rapidity of infection, tend to support the view that the virus of influenza is a constant habitant of the human host, which, owing to conditions not clearly known, assumes virulent and infective properties and gives rise at intervals to widespread outbreaks of the disease.

The difficulty which has to be faced in elucidating the problem of the aetiology of influenza is the fact that the disease as met with in epidemic form is a mixed infection due to the specific virus and secondary organisms. In this connexion an interesting observation has been made by Greenwood, Topley, and Wilson. They have found that in herd infection the degree of immunity conferred by a previous attack is more marked and more durable in the case of a virus infection than in certain bacterial infections.—I am, etc.,

Helensburgh, Dec. 3. H. HYSLOP THOMSON.

Plasma and Serum for Burn Shock

SIR,—Dr. D. A. K. Black in his article (November 23, p. 693) gives the following formula for the estimation of the amount of plasma lost and consequently to be replaced—namely, $\frac{Hb_2}{100} = \frac{5}{5-x}$, where Hb_2 is the observed haemoglobin value after the burn and x is the amount of plasma lost in litres. This is based on the premise that one is justified in assuming a haemoglobin percentage of 100 before the burn occurred. It is generally accepted that healthy persons may have a percentage below 100, say 95. The formula actually is independent of the previous percentage (which there is no method of ascertaining), and the calculation is a function of the percentage of haemoglobin over 100 at the time of the shock—namely, $x = \frac{5(y-100)}{y}$, where y is the percentage of haemoglobin.

The practical point is that if the previous haemoglobin had been 95% the amounts of plasma to be injected given in Table II would all need to be moved up a step approximately. With the higher percentages after the burn—for example, over 120—this would make no appreciable difference, but the alteration would be considerable with percentages below this. This difficulty could be overcome by a somewhat liberal interpretation of the amount to be injected given by the formula for the lower percentages. To a great extent the optimum amount to be injected must be found by experience and by judgment in each case. As Dr. Black rightly says, in patients with shock an overdose of fluid is as dangerous as an underdose, and it is of great value to have a simple formula as a rough guide.—I am, etc.,

London, W.1, Dec. 4. H. LETHEBY TIDY.

Tetanus and the Need for Prophylaxis

SIR,—Tetanus is a horrible disaster. The dire disease is caused by the spore-bearing tetanus bacillus, a very resisting bacterium. There can be no doubt that this organism is found most frequently in earth, and particularly in earth which has been heavily manured, as in a market garden. Much of the infected earth has been manured with horse dung, and in towns it is from dried horse dung that most of the cases derive their infection. In this age of petrol in place of horse power the incidence of tetanus from horse dung has coincided with its decrease. In London, as a typically large city, the decrease in this century has been marked. In the early days of the war of 1914–18 tetanus was by no means infrequent, especially in the much-cultivated soil along the River Marne, where market gardens for Paris are to be found. The introduction of tetanus antitoxin caused a dramatic lessening of cases and consequently of the death rate from this dread infection.

Again war is with us, and the metropolis of Great Britain and many of its companion cities and towns, as well as the countryside, have become the "front line," and there are a number of daily casualties from all sorts of causes.

In the E.M.S. Memorandum No. 4 for England and Wales, published soon after the outbreak of war, Section 15 reads: "A.T.S.—Tetanus antitoxin should be given to all casualties with open wounds." Undoubtedly this is a wise if not an ideal precaution, and doubt is beginning to be expressed as to whether this is really necessary and whether the admonition has been carried out on a wide scale. In order to form an opinion of the necessity one of us (F. C.) has sought to obtain data as to the incidence of and death rate from tetanus from the thirteen London hospitals to which are attached medical schools. A period of not less than ten years has been taken, and the results here generalized show two main facts: (*a*) the incidence is remarkably low, and (*b*) the death rate is still very high.

During the years 1930–9 (inclusive) seventy-five cases of tetanus were recorded at nine of the London teaching hospitals as follows: St. Bartholomew's 12, Middlesex 12, St. Thomas's 11, St. George's 11, Guy's 10, London 10, University College 5, and King's College 4, whilst at the West London Hospital no cases of tetanus occurred during the last ten years, although this hospital stands near a road junction where there are many street casualties. Replies had not been received at the time of the composing of this note from the Westminster, St. Mary's, Charing Cross, and the Royal Free Hospitals, no doubt owing to difficulties imposed by the war. At one hospital the period taken was from 1923 to 1932, as records were not available for the decennial period 1930–9.

It will be noted that the years concerned in all these returns are those in which mechanical transport had largely replaced horse traction. The number of cases is too small and the time period (ten years) too short to establish conclusions, but tend to show an incidence of approximately one case of tetanus in each year at each hospital and a mortality of 40%. Since the onset of war in September, 1939, there does not appear to have been a uniform system of administration of the appropriate dose of tetanus antitoxin in most of the hospitals and aid posts to which civilian war casualties have found their way.

The object of this short communication is to elicit information as to use of tetanus antitoxin in England and Wales for these casualties with open wounds, and as to whether there has been any incidence of tetanus in any area, and, if so, had the antitoxin been injected or not and what was the death rate.

Some definite data from even a few scattered areas, of both town and country, would be enlightening. Whilst raising questions on several points, it is essential to reiterate that there

are cases in which the antitoxin should be given, such as large lacerated wounds which have been contaminated with road dust, or, particularly in the country, with earth. Two further points are to be noticed in relation to possible cases of tetanus and its preventive treatment: these are—(1) that M.P.C. 46 label should be filled in if the antitoxin has been given, with the date and the dose; and (2) that the dosage advised as the initial one has been increased from 2,000 to 3,000 international units. In connexion with the actual administration, two other points should be mentioned: (1) the time required for injection, etc. (this cannot be less than two minutes in each instance); and (2) the cost of each ampoule of the antitoxin.—We are, etc.,

W. MCADAM ECCLES.
London, W.1. FRANK COLEMAN.

Tetanus Antitoxin for Civil Casualties

SIR,—Dr. Harold H. Sanguinetti (November 23, p. 720) referred to the administration of tetanus antitoxin in the cases of civilian casualties. At this hospital we had a case of tetanus which we think is worthy of recording.

A male aged 48 was admitted here on November 9 with severe tetanus. He was cyanosed during convulsions, which were frequent, and he died five hours later, treatment being of no avail. The history was that a week before, on November 2, whilst leaving his Anderson shelter he cut his scalp on the steel of the entrance. The cut was small and he paid no further attention to it except the usual home treatment. Five days later he went to his doctor because of spasm of the jaw which resulted in the cutting of his tongue. Two days later he was admitted here.

We think this answers Dr. Sanguinetti's question about the occurrence of tetanus from London soil and the advisability of giving tetanus antitoxin in all cases of open cuts or wounds wherever there is the possibility of contamination by soil.

We would like to thank Dr. A. G. Troup for permission to record this case.—We are, etc.,

V. H. ADDISON.
A. R. NETTLETON.
Willesden Municipal Hospital, Dec. 6. J. E. G. EARLE.

Dangers and Dosage of Sulphapyridine

SIR,—In view of the recent discussion on the potential danger of the uncontrolled use of sulphapyridine (M & B 693), the following two cases admitted in November, 1940, to Llandough Hospital, Cardiff, may be of interest. In each case agranulocytosis was clearly related to the drug, which had been administered over an unduly long period and in excessive total amount.

Case 1.—Male, 47 years of age. Gonococcal urethritis treated for three weeks with 3 grammes of sulphapyridine daily. Admitted with severe ulceration of fauces; white blood cells 1,800 per c.mm., granular leucocytes absent. Slowly, but fortunately, this case recovered after heavy dosage—50 c.cm. a day—of pentnucleotide.

Case 2.—Female, 49 years of age. History of spasmodic asthma for twenty years. For recent bronchitis she had taken more than 24 grammes of sulphapyridine—how much more is not known—over fourteen days. She had been advised by her doctor to take 1 gramme four-hourly if breathing was laboured or 1 gramme two-hourly in a worse attack. On admission the fauces were ulcerated and she was dyspnoeic. White blood cells were 800 per c.mm.; granulocytes absent. In spite of large doses of pentnucleotide no leucocyte response was obtained, the white cells sank to 200 per c.mm., and the patient died seven days after admission.

It would be a great misfortune if careless usage brought this valuable remedy even into partial disrepute. We suggest that in practice it might be wise to follow a procedure calculated to safeguard general accident. Perhaps the following would suffice: (1) The drug should never be administered for a period longer than seven days, and the accepted dosage should be faithfully followed—for example, first day, 6 grammes; second and third days, 4 grammes; subsequently, 3 grammes a day. (2) In the present state of knowledge it is not justifiable to give the drug in trivial disorders (boils, etc.). (3) All prescriptions should be clearly marked "not to be repeated" until the sale of the drug without quantitative prescriptions is strictly prohibited.—We are, etc.,

R. A. WILLIAMS.
Llandough Hospital, Cardiff. J. ALUN EVANS.

The Problem of the Shelters

SIR,—As chairman of the A.R.P. Co-ordinating Committee to which your correspondent Mr. H. Mason refers in somewhat slighting terms (November 23, p. 720), may I make the following points. He states that our shelter policy would increase "herding," but the shelters which we advocate are divided into comparatively small compartments, in order to minimize both casualties and infection. They are, moreover, ventilated and have adequate sanitation, both of which are difficult in small shelters. Mr. Mason states that our policy would also "increase penetration bombing." In fact a 1,000 lb. bomb would be needed to produce damage to a shelter of the type which we advocate comparable to the effect of a 100 lb. bomb on an ordinary shelter. Thus, even if "penetration bombing" were adopted, casualties would be greatly diminished.—I am, etc.,

Harpenden, Herts, Dec. 2. J. B. S. HALDANE.

Realism in First-aid Instruction

SIR,—May I defend my fake plaster wounds against the assumption that they break up easily (Mr. W. Sayle Creer, November 30, p. 761). They are mostly of size small enough to escape strain and are of rounded outline (*vide* photograph in December *First Aid*). During repeated use there has been no trouble from breakage. It should be understood that any virtue they have is in their backing of Unna's paste, which makes them stick just sufficiently wherever they are placed. Probably most doctors will find it easier to work with plaster-of-Paris bandage than with papier mâché and lacquer paint.—I am, etc.,

Denbigh, Dec. 1. D. G. DUFF.

Mobile Unit at Coventry

SIR,—The details given by Dr. Noel Jackson of his improved mobile unit (November 16, p. 682) are most interesting, and the views expressed in the article on "Air-raid Casualty Services" (November 23, p. 716) very stimulating. Dr. Norman Gregg's letter (November 30, p. 759) makes very useful reading; perhaps my views as one who was "on the spot" on November 14 at Coventry may be of some interest.

Six nurses and myself were dispatched in a mobile unit to the scene of a bomb, and when we got there we were informed that we were an hour too late. On our way we passed through an inferno of flame and were the target from above. We were hit on our way back by a near miss and the unit was wrecked. One of the nurses got a perforated abdomen from shrapnel and was in a bad way. A couple of cigarette packets stopped a piece of shrapnel as it pierced my coat. After about four hours the military got us back to No. 9 F.A. Post, Wyken, and probably saved the nurse by rushing her to a neighbouring town. On our return we found the F.A.P. full of badly wounded cases and a few dead; we had been much wanted and our absence had been deplored.

This experience of a mobile unit under working conditions—probably a good test—makes me question the advisability of its utility. It is a possible waste of useful personnel. I think we would have been much more usefully employed by remaining at the F.A.P. All types of cases were brought to us and we sorted them out, sending to hospital the worst ones. I think that speed in getting the cases to where they can get aid is the first essential; and perhaps anti-shock treatment, and the fitting of splints, etc., can be better done at an F.A.P. Any possible loss to the sufferer is more than compensated by the improved equipment and surroundings of the F.A.P., and the conditions at the scene of the casualties in Coventry were certainly not comfortable or conducive to giving efficient first aid.

It is questionable if the possible destruction of the mobile unit and its members is worth the risk, seeing that they can

deal with comparatively few cases at the location of the destruction under trying and indifferent conditions, when by staying at the F.A.P. they can do such good work to cases brought in by a very efficient and careful A.R.P. service.

The nurses and the driver were so magnificent and so loyal to their sense of duty that I have no doubt but that they would again go out in such conditions, and I suppose I would go with them; but I think the procedure requires some modification by those in charge.—I am, etc.,

London, S.E.5, Dec. 3. J. J. CREMIN.

Nutritional Disturbances and Optic Atrophy

SIR,—In your issue of October 19 you published an annotation under the heading "Nutritional Disturbance and Optic Atrophy." In the discussion you refer to Moore in tropical countries having found "vitamin deficiency in a wide range of neurological affections in animals and man," giving as your reference *Lancet*, 1937, **1**, 1225. This is a report by me on an investigation on deficiency disease in Nigeria. I should like to state that at no time, however, have I undertaken any experimental work on animals; in that respect, therefore, it would appear that your commentator really meant Moore (T.), whose work in animal research is so well known. On the other hand, I do not think he has worked in the Tropics. In your second reference, unless one checked this up carefully, it would appear to refer to the same Moore as in the first reference. It must mean T. Moore, and certainly not your humble servant D. F. Moore. It is rather an extraordinary coincidence that several Moores are actually interested in these problems, and I feel this has caused the possible misunderstanding which has arisen.

In the condition which I have studied in Nigeria, as have others, such as E. J. Wright in Sierra Leone and Landor and Pallister in Malay, and which Stannus has always maintained to be none other than a manifestation of pellagra, I believe there is no evidence which can support a vitamin A deficiency causing either the neurological or other signs and symptoms arising in this condition. I have pointed out consistently that xerophthalmia and keratomalacia, classically accepted examples of gross vitamin A deficiency, are conspicuously absent in all the cases seen in Nigeria. Moreover, the annual medical returns from the various African Colonies have also failed to report this condition. Again, child blindness, due to *destructive* lesions of the eye, so well known as due to the same cause in deficiency disease, is also absent from those reports, in direct contrast with those issued from India, Ceylon, parts of East Africa, the West Indies, Java, Philippines, China, etc., where this particular problem, quite apart from other types of deficiency disease, which also exist, provides a serious factor in itself.

These facts are supported by other evidence. The dietaries of the West African peoples living in or near the great palm-bearing belts differ in one great respect from nearly all other tropical dietaries in that red-palm oil is eaten daily by them and even by the poorest. Red-palm oil has been shown by Prof. Drummond and Morton to be rich in biologically active carotene (pro-vitamin A), in contradistinction to practically all other edible vegetable oils, on which so many peoples in tropical lands depend as their source of fats. In other respects West African diets, in common with those of other tropical or subtropical areas, tend to be poorly balanced, often deficient in animal protein and fats, and excessive in carbohydrate.

There remains the question of therapeutic proof. It has been shown that the whole syndrome is curable by marmite (provided always that the visual defect, present in the more severe cases, has not progressed to partial optic atrophy too long). In order to make certain also that these eye lesions were responsive to *autoclaved* marmite, as the more general signs had been proved to be already (first shown by Landor and Pallister in Malay and confirmed in Nigeria and elsewhere), I undertook an extended series of such trials on vision in 1937–8 in a private visit to Nigeria. Each case received a dosage of approximately one ounce of autoclaved marmite or yeast daily for a period of two to three months. The results were as fully responsive as those formerly obtained with marmite. Thus the whole syndrome responds to autoclaved marmite. Other workers have shown that cod-liver oil has no appreciable effect on any of these lesions, Landor and Pallister stating that patients get worse.

In 1938 I also tried nicotinic acid, 500 mg. per day for a period of two to three weeks, on a small number of cases. These were fully reported upon in July, 1938, in a privately issued report, and again in April, 1939. No improvement was noted on the mouth and skin. As such results were totally unexpected at that time and the cases were few, confirmation of these results was invited. This came quite independently from Landor in Malay in July, 1939, and has since been followed by others. So far no such trials have been extended to the nervous symptoms. Such would imply much longer trial, and in the event of failure would not be without risk in restoring vision.

More recently Sebrell, Sydenstricker, Jolliffe, Butler, and other American pellagrologists have described the effects of "ariboflavinosis in man," including certain ocular defects. Some of the lesions are very similar to this syndrome, but there is some difference. It is interesting to note in this respect that manioc is very largely eaten in West Africa, so much so that it became a "food suspect" to the writer, who has compared it to "spoiled maize" in classical pellagra. Manioc has been the subject of particular research by A. Clark, whose work on cyanic foods is so well known. In a recent personal communication from Ceylon Clark informs me that manioc is quite rich in riboflavin, and so still the final cause has to be more fully explained.

It is to be hoped, particularly having regard to the more general neurological conditions such as your annotator had in view, that after the war this condition can be more widely investigated. There is a very large field for those interested in nutritional research, and abundant material. West Africa is particularly attractive in this respect, as it possesses a quite exceptional dietary.—I am, etc.,

Parkstone, Dorset, Nov., 1940. D. FITZGERALD MOORE.

Passive Movement after Tendon Suture

SIR,—I was interested in the correspondence on tendon suture, as naturally the practitioner in physical medicine, part of whose work is that of an orthopaedic physician, often gains a view whose perspective differs from that of the orthopaedic or general surgeon. Inevitably this must be so if he works with and for a large variety of individual surgeons. Among them tastes differ as to the degree of fixation that should be adopted after operation, in both severity and duration. There is only one comment that I should like to make. Some surgeons hand over these patients for physical treatment at the most not later than forty-eight hours after operation, while others ask our co-operation after the stitches have been removed, and others not until a considerable time has elapsed from the time of operation, which may vary up to even eight weeks. There are few types of surgery in which after-treatment varies so much with the individual surgeon.

Experience has taught me that if movement is begun and maintained at an early date success is the general rule, but prolonged fixation seems doomed to failure, and this is what one might reasonably expect. As a result of the injury and subsequent operation the synovial lining of the tendon sheath and of the tendon must of necessity suffer from a traumatic tenosynovitis over a considerable length of tendon and tendon sheath. If these surfaces are left in contact together without movement it is inevitable that the two surfaces will become glued together by adhesions all over the entire surfaces of both structures to an extent that renders the return of function well-nigh impossible. On the other hand, if movement is maintained from the outset these adhesions cannot form unless the treatment is abused sufficiently to maintain an inflammatory process.

Generally speaking, success of tendon suture varies with the duration of immobilization, and the most successful cases are those in which passive movement is administered from the second day after operation, though there is little risk in waiting for four or five days. After this time the adhesions between the tendon and the sheath are beginning to assume a consistency which renders true passive movement difficult; at the end of ten days it is impossible, as by this time the adhesions are sufficiently firm to require stretching or even breaking down, and stretching forms no part of passive move-

ment in so far as some element of force is required to attain movement, and the so-called "passive movement" at once degenerates into forced movement. This, of course, should never be allowed for at least four weeks. It should be needless to add, though unfortunately it is still necessary to do so, that in speaking of "passive movement" the technique of physiotherapy is essential and not that usually understood when the phrase is used from the surgical point of view. In other words, the movement at the beginning must be of minute range, which is increased day by day; but throughout the great guiding rule must be that at no time must there be even a twinge of pain during the movement. If the treatment is abused it will naturally be condemned. In the early stages, provided the two surfaces move on one another, the extent to which they move is of no importance; any movement, no matter how small, is adequate to prevent the formation of adhesions.

The art of administering true passive (or relaxed) movement is a highly skilled and special branch of physical treatment, and to hand over a case of tendon suture to someone who has not been adequately trained in this special work is simply to court disaster. It is utterly wrong, however, to condemn a treatment because it is wrongly administered and so abused, though the tendency in the past has always been to do so.—I am, etc.,

London, N.W.1, Dec. 4. JAMES MENNELL.

Closed-plaster Treatment of Wounds

SIR,—Again I am forced to disagree in your columns with my friend Mr. R. Watson-Jones. He writes (November 30, p. 764): "I am seldom impressed by discussions as to the exact authorship of this or that technique because so many advances are the result of the conscious or unconscious collaboration of a number of scientific workers." He then plunges in to pick one of a chain of workers, all of whom have had the same idea, for sole credit. Trueta has never claimed authorship of the closed-plaster technique and gives full acknowledgment to Winnett Orr, but by his extension of the method to universal use, by his tireless advocacy, by his demonstration of results, and by his constant improvement in detail he has earned an equal place. Winnett Orr was the Trueta of twenty years ago, who took over and introduced to fresh circles a method in whose origin he had no part.

I cannot claim to know where the closed-plaster technique was first described. I can only record that when I went as a junior surgeon with a Red Cross unit to the 2nd French Army in March, 1915, I found the method universally established in all the hospitals of that sector. It was then said to have been used by Ollier in the Franco-Prussian War, but it was already so old by 1915 that its origin was lost in antiquity, and so universally accepted by the surgeons of our allies that none claimed credit for it. The following paragraph from my first article[1] on wound treatment, written twenty-three years ago, will bear this out.

> "In this method a loose but ample sterile dressing is put on the wound, the part well immobilized, and on the whole left severely alone. A careful eye is kept on the patient's condition, but the dressing is not changed until it is soaked through and becoming really offensive, unless there is any reason to suspect some new complication. . . . This method has enthusiastic advocates in our Army, and is the most common one in the French Army. . . . As an extreme example I will give you the routine treatment of infected wounds of the knee-joint at a French hospital not fifty miles from here. Five drainage tubes are put into the joint, an abundant sterile dressing is put on, and then the whole limb is put in plaster-of-Paris. It is left like this for sixty days. The plaster is then cut off, the tubes are removed, and another dressing and another plaster are put on and left for thirty days. When this dressing is removed the wounds are healed, or nearly so."

I would always support Watson-Jones in his wish to give credit where it is due, but I must point out that if he intends to trace all the authors of the Winnett Orr technique he will be writing a fresh verse to "Widdicombe Fair." Surely "the closed-plaster method" is sufficient title.—I am, etc.,

London, W.1, Dec. 4. W. H. OGILVIE.

[1] *Nursing Times*, 1917, March 31, p. 376.

Mass Radiography

SIR,—Dr. Douglas Boyd is to be congratulated on his able and timely advocacy of the use of full-sized films in mass radiography (November 30, p. 765). As has been pointed out, the method of microradiography is irrational, and the only thing that can be put forward in its favour is its cheapness. To those who still maintain that the taking of large-sized films is too expensive, it would be well to urge the alternative method of fluoroscopy or screen examination and the taking of films only of those cases where the screen examination reveals shadows which are suspicious of lung pathology.

Fluoroscopy or screen examination should be to the radiologist what microscopical examination is to the pathologist. Just as the latter first examines his specimen as a whole and then examines it in detail under the microscope, so should the radiologist examine the chest, first of all as a whole, observing the heart and lung movements, and then "coning down" and examining small sections of both lungs in detail. He thus has the opportunity of seeing whether there are any areas of localized emphysema or impaired air entry, these often being most valuable clues to the discovery of early lung disease.

Although there is little doubt of the value of a well-conducted screen examination, it would be well to utter a warning against its use in a slapdash manner. Unless the radiologist is prepared to spend sufficient time getting his eyes well accommodated and examining all parts of the lung thoroughly, it would be better to omit the examination altogether and rely on the use of large-sized films alone.—I am, etc.,

London, W.1, Dec. 7. F. G. NICHOLAS.

Ergometrine in Migraine

SIR,—That the practice of medicine should be founded on the results of scientific investigation is exemplified by the work on the extract of ergot by Sir Henry Dale, whose election as President of the Royal Society the profession acclaims. He found that the alcoholic extract of ergot contained principally the alkaloids of the ergotoxine group, such as tyramine and histamine, while the watery extract contained practically none of these alkaloids, its active substance being identified as the alkaloid ergometrine (*Journal*, Dec. 7, p. 791). Herein is doubtless the explanation of the excellent effect of ergometrine in migraine as compared with ergotoxine (the latter containing histamine for one thing). In 1938 I first gave ergometrine in a very serious case of migraine sent to me by Dr. I. C. Campbell of Wickford (Essex). For twenty years this lady had suffered every month with a terrible affliction, and did not recover for a week. She was given ergotoxine and other supposed remedies, but on taking one or two tablets of ergometrine (1/2 mgm.) she got wonderfully better, having only slight headaches from time to time, which did not practically interfere with her duties. In other cases which subsequently occurred the same result was achieved.—I am, etc.,

Dec. 6. A. G. AULD.

Vitamin P in Purpura

SIR,—The annotation on vitamin P in purpura (November 30, p. 751) based on Kugelmass's paper gives, I think, an incomplete impression of the present status of vitamin P (introduced by Szent-Györgyi and his co-workers in 1936). It is true that others have claimed it to be beneficial in certain forms of purpura or lowered capillary resistance—for example, Scarborough,[1] Decker,[2] Hiramatsu,[3] and Morii.[4] But the total evidence for the value of vitamin P in purpura is still scanty, for each author deals with very few or even single cases of any one disease and spontaneous remissions of purpura are common. Moreover, Franke[5] and Gimsing[6] found it disappointing. I have tried vitamin P in several cases of purpura simplex observed for months, but hitherto without benefit. Scarborough, in careful experiments, found it of value in

[1] *Lancet*, 1940, **2**, 644.
[2] *Münch. med. Wschr.*, 1939, **86**, 292.
[3] *Jap. J. Derm. Urol.*, 1939, **46**, 105.
[4] *Biochem. J.*, 1939, **29**, 487.
[5] *Z. klin. Med.*, 1938, **135**, 283.
[6] *Ugeskr. Laeg.*, 1939, **101**, 117.

forms of lowered capillary resistance, but noted that Szent-Györgyi failed to repeat successfully his original work upon which the existence of vitamin P was based.—I am, etc.,

London, S.W.10, Dec. 2. ELI DAVIS.

"Egyptian Tummy"

SIR,—I would like to say a word about "Egyptian tummy," or—as it is called by lewd fellows of the baser sort resident in Egypt—"Gippy tummy." Dr. Leigh Canney (December 7, p. 806) appears to ascribe this ailment to meteorological causes. He stresses the dryness of the climate, and as part of his suggested treatment even recommends removal to more humid localities. He also mentions Assuan; and I assume that his experience of the condition may have been mainly gathered in the drier atmosphere of Upper Egypt. How, therefore, would he explain its prevalence in the more humid districts of Lower Egypt—for example, Alexandria, Port Said, or even Cairo during High Nile? In these places the night humidity is of the order of 95%, and 60% or more in the daytime.

If what Dr. Canney calls "Egyptian tummy" is the same condition as that which is called "Gippy tummy" in Lower Egypt, it is nothing more nor less than a mild bacillary dysentery, usually due to Flexner γ bacillus. It commonly affects new arrivals within a short time after they have entered the country, and may vary in severity from a little mild abdominal discomfort to a degree exhibiting all the factors of the true dysentery syndrome.

Dr. Canney does not say whether the stools of his patients were examined under conditions which would prevent the death of the organism on the journey from bed-pan to laboratory.—I am, etc.,

Brookwood, Surrey, Dec. 8. H. M. STANLEY TURNER.

Indian Medical Department

SIR,—My attention has been drawn to the *Journal* of June 15 (p. 1002), in which the casualties in the medical services during the war have been published. Referring to the I.M.D. you write: ". . . The Indian Subordinate Medical Department, the word 'Subordinate' now being omitted from the title on account of their services in the war of 1914–18. Most of the officers of this Service have no European medical qualifications, though all have, necessarily, Indian medical diplomas." As the representative of the Anglo-Indian community which forms the bulk of this Department, I feel I must write and correct the wrong impression which you seem to entertain. Entrants into this Department to-day are required to undergo the full course of training for a medical degree in an Indian university, which is equivalent, and perhaps in some cases superior, to some of the registrable qualifications in the United Kingdom and Europe. It is true that years ago officers of this Department were not required to take a degree, but many of these men have proved themselves professionally better than those who had secured registrable qualifications.

Your statement that most of the officers of this Service have no European qualification is also incorrect, for a good number have secured such qualification, as a reference to the official list will indicate. I should also like to point out that the statement that Lieutenant Kiddle and Military Assistant Surgeons De Ravara and Firth were employed in Indian military hospitals is incorrect. They were attached to the British military hospitals at the respective stations. I may add for your information that the I.M.D. is attached to the British Army in India, and the warrant and commissioned officers of the Department are ordinarily attached to the British military hospitals. Here also I would ask you to refer to the official publications.

My object in writing this letter is to enable you to give a correct report when referring to this very worthy Department, which ranks first among the Departmental Services of the British Army in India.—I am, etc.,

Calcutta, Sept. 8. HENRY GIDNEY.

*** Sir Henry Gidney states that the members of the I.M.D. receive a full medical course of training before joining the Department. This fact no one would dispute; it is well known to all medical officers who have served in India. He also states that many of the members have European qualifications; that fact is shown in every *Indian Army List*. Those who hold such qualifications are a minority, it is true. Probably many more would take European qualifications if it were not for the great expense of the journey to and residence in the United Kingdom necessary to do so, which comes hard on the members of a Service which is by no means well paid; not to mention the necessity of spending in hard work the furlough earned by Army service, and often gained only with difficulty. Sir Henry appears to object to the statement that the members of the I.M.D. for the most part serve in Indian military hospitals. As everyone in India knows, they form the greater part of the personnel of the hospitals for British troops in India, generally known as station hospitals. Surely these hospitals are Indian military hospitals, the most important military hospitals in India. Perhaps the phrase "military hospitals in India" would sound better than "Indian military hospitals," though it comes to exactly the same thing.—ED., *B.M.J.*

Obituary

MAURICE PARRY-JONES, M.D.

We regret to announce the death in his eighty-first year of Dr. Maurice Parry-Jones, late consulting physician to the Derbyshire Royal Infirmary. It was Parry-Jones's early ambition to become a doctor, and at the age of 16 he took a position as junior master at a preparatory school in order to help him pay the fees for his medical education. Subsequently he entered Guy's Hospital, where he was a contemporary of Ray Lankester, Goodhart, Arbuthnot Lane, and others with whom it was his joy to maintain friendship for many years. In 1883 he obtained his M.B., and two years later his M.D. He was house-surgeon and resident obstetric house-surgeon at Guy's, and prosector at the Royal College of Surgeons; later he was appointed resident medical officer to the City of London Hospital for Diseases of the Chest, where the foundations of his interest in and extensive knowledge of diseases of the heart and lungs were laid. In 1886 he accepted a colliery appointment at Pinxton, Derbyshire. This did not, however, satisfy his clinical ambitions, so on learning that there was soon to be a vacancy on the staff of the County Hospital, Derby, he moved there in 1898, and was subsequently appointed assistant physician to the Derbyshire Royal Infirmary.

Clinical medicine in general and diseases of the heart and lungs in particular were Parry-Jones's main interests. He belonged to the older school, which rightly attached much importance to physical signs and to morbid anatomy. He was seen at his best during a ward round. It was a pleasure to watch him examine a difficult case, and to see his meticulous care in taking the history, his clinical observation and skill in eliciting the physical signs, and then to hear the diagnosis based on his large experience and his extensive knowledge of morbid anatomy gained by routine visits to the post-mortem room. But the visit was not yet finished; whether the news was good or bad he paid particular attention to the explanation he gave to the patient or the patient's friends, revealing in so doing his sympathy for and his understanding of his fellow creatures. He always gave careful attention to the details of treatment, especially to diet and drugs, of which he had an extensive knowledge. With his clinical skill and great common sense his practice became extensive, and his advice was sought by patients and colleagues from all over the county. He used to say that it was a great compliment for a doctor to ask him to attend either himself or his family.

No one who knew "P.-J.," as he was generally called, will forget his robust personality. Quick, with a keen intellect and a certain bluntness of speech, he did not

suffer fools gladly, but to the sick of all classes, most of all perhaps to his hospital patients, he would give generously of his skill and sympathy. He was a keen supporter of the Derby Medical Society, rarely missing a meeting, and had been a member of the British Medical Association for forty years. Although he was extremely happy in his domestic and professional life he had several disappointments. The success which he achieved was a little slow in starting; he missed being elected to the hospital staff on the first occasion, and had to wait for a couple of years. But the most grievous blow was the death of his elder son, who was killed at the battle of the Somme in 1916. In 1918 symptoms of double glaucoma and cataract began to develop, and although progress was arrested by several operations the condition interfered with his life. He, however, continued in practice until 1927, when he retired to live at Torquay. Next to clinical medicine and the welfare of his hospital, his interest was music; he had a good bass voice, and took a prominent part in musical activities in Derby and Torquay.

He leaves a son, who is senior housemaster of Sherborne School, and one daughter, who is married and lives in Derby.

Universities and Colleges

UNIVERSITY OF WALES

WELSH NATIONAL SCHOOL OF MEDICINE

The following candidates for the degrees of M.B., B.Ch. have been approved at the examinations indicated:

SURGERY.—Mary E. Budding, Doreen M. E. Cranch, D. D. Howell, J. V. Jones, Anne N. M. Llewhelin.

OBSTETRICS AND GYNAECOLOGY.—G. B. Downs, Eirian Spickett, G. A. Wright.

PATHOLOGY AND BACTERIOLOGY.—W. S. Hill, R. T. James, F. C. Jenkins, A. E. Jones, Flora Macaulay, Annie M. Rees.

PHARMACOLOGY.—T. W. Brokovski, N. A. Cohen, H. J. Houghton, Dorothy M. Hyde, Tessie Phillips, Annie M. Rees, Dilys M. Rees, Dorothy Roberts, A. K. Toufeeq, S. I. Williams.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC, TRINITY COLLEGE

The following candidates have been approved at the examinations indicated:

M.A.O.—*J. B. Fleming.

FINAL MEDICAL EXAMINATION.—*M.B.*: †Yvonne O. Mallet, Olga Bloom, J. M. Slattery, A. H. H. Guilbride, C. D. MacCarthy, J. I. Stafford, J. R. C. Holmes, I. T. Wolpe, R. M. Halahan, H. Menter, S. Smullen, B. E. R. Solomons. *B.Ch.*: J. T. Hanna, N. M. Smith, I. T. Wolpe, W. J. Thompson, Edna G. Merrick, E. G. W. Lynch, B. Kernoff, N. C. Brown, H. B. C. Houston, G. Tattersall, B. E. R. Solomon, W. Badner, H. T. Hutchinson, H. Menter, J. G. P. Mullally, J. C. Watson. *B.A.O.*: *B. W. Wyllie, †W. G. D. Caldwell, E. D. Kerr, M. E. Weiner, B. Marcus, H. H. Robinson, N. J. Anderson, A. F. Crowley, J. E. Adamson, S. D. Killen, E. G. W. Lynch.

* With first-class honours. † With second-class honours.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting of the Royal College of Physicians of Edinburgh, held on December 5, Dr. Charles McNeil was elected president and Drs. Alexander Goodall, R. B. Campbell, L. H. F. Thatcher, A. Fergus Hewat, A. Graham Ritchie, and L. S. P. Davidson were elected to form the Council of the College. Dr. A. Fergus Hewat was nominated vice-president.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a recent meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, with Mr. Roy F. Young, President, in the chair, the following were admitted Fellows of Faculty: Alexander David Telford Govan, M.B., Ch.B., Luk-Yip Hui, M.B., B.S., Charles Frederic William Illingworth, M.D., Ch.M., F.R.C.S.Ed., George Macfeat Wishart, M.D.

FACULTY OF RADIOLOGISTS

The following candidates have satisfied the Fellowship Board at the examination for the Fellowship of the Faculty: *Radiodiagnosis.*—Thomas Lodge, M.B., Ch.B., D.M.R., Thomas Dallas Overend, M.R.C.S., L.R.C.P., D.M.R.E.

Medical Notes in Parliament

Interned Alien Doctors

During a debate in the House of Commons on December 3 Dr. A. V. HILL urged that a change of attitude towards alien internees was necessary. He said that scientific bodies, universities, medical schools, and research institutes, to whom many of these aliens were well known, were not consulted when they were suddenly interned, with consequent grave damage to their work. Why had it taken months for permission to be given to aliens, already released, to continue the important work of wound healing at Cambridge? Surely the subject of wound healing was of sufficient importance now to warrant the cutting of red tape. He quoted the case of a medical man, a refugee from Nazi oppression, who came here in 1933. He obtained his British medical qualification. In 1938 he applied for naturalization, which was near to being granted when the war broke out. In the summer of 1939, before the war, he volunteered for the Emergency Medical Service. In September he resigned the practice he had built up and joined that service. He served in a hospital until May, and on May 12 he was interned. On November 5 he was released—six months wasted. Instead of being told that they hoped he would go back to his job, this man was informed that probably he could not go back to the Emergency Medical Service. He had lost his practice. He was compensated for that, for six months of imprisonment, and for the breakage of a written contract of at least twelve months' employment in the Emergency Medical Service by a gratuity of one month's pay, which he was forced to accept because he and his family were penniless. Yet doctors were required.

Mr. PEAKE said that Dr. Hill's speech was founded largely on the very simple view that it was perfectly easy to label all these people either as our friends or our enemies. That was taking an altogether too simple view of the problem. Many of them were persons with divided loyalties, and it was extremely difficult to ascertain what their true feelings were. There was a certain justification for the complaints about delays, but there were also a number of unjustified complaints. Careful investigation had to be made with reference to other Government Departments, the security services, and so forth. The Government's policy, also, had been changing ever since the June internment took place. It had therefore been very difficult to give a final and definite reply to any individual case. In many instances final answers were deliberately held up with a view to dealing with the case at a later stage when a man would qualify for release.

Flour

In a reply to Sir Ernest Graham-Little on December 4, Major LLOYD GEORGE said that about 95% of the flour manufactured in the United Kingdom consisted of flour from which the millers separated fine and coarse wheat feed, also known as sharps, middlings, and bran, which were disposed of almost entirely as animal and poultry feed. This was permitted in producing national straight-run flour. The elements of the wheat berry which contained vitamin B_1 were normally included in wheat feed, but some millers extracted a part of the germ separately. They used this themselves or disposed of it to other millers for use in the manufacture of high-extraction germ flours. No germ, wheat feed, or other by-products of milling were bought by the Government for feeding the people. The only factory at present capable of producing the synthetic vitamin B_1 on a scale sufficient for its introduction into white flour had been erected by a firm of chemical manufacturers. The same manufacturers engaged in the manufacture of the anti-scorbutic vitamin.

Medical Attendance at London Air-raid Shelters

On December 3 Mr. GROVES asked the Minister of Health how many medical practitioners had been so far appointed by the Common Council of the City of London and the Metropolitan Borough Councils for the supervision of public air-raid shelters, and what steps were being taken to cause appointments to be expedited in districts where there appeared to be some delay. Mr. MACDONALD said that the number of doctors appointed to assist the medical officers of health in

these areas in the regular inspection of air-raid shelters was six, and the number of general medical practitioners whose services had been secured for attendance at shelters was 337. Medical officers of his Department were in personal consultation with the medical officers of health to ensure that such additional appointments as were necessary were made without delay.

Doctors' Losses of Surgery and Equipment

Mr. SORENSEN on December 3 asked the Minister of Health if he was aware of particular hardships experienced, or likely to be experienced, by local medical practitioners losing their surgery, equipment, and instruments through air raids, and in losing patients who, through that loss, had to consult other medical practitioners; and whether he would enable swift replacement to be made and other steps taken to enable those medical practitioners to continue their practice. Miss HORSBRUGH said she feared that a number of medical practitioners, like other persons in professional life, had suffered hardships by reason of air raids, but she had not heard of any cases where serious difficulties in the way of securing treatment for their patients had arisen, and the Minister was not satisfied that it would be proper to provide any special measures of assistance beyond the arrangements announced by the Prime Minister on September 5.

Surgical Equipment and Limitation of Goods

On December 3 Mr. R. MORGAN asked the President of the Board of Trade whether he was aware that under the Limitation of Goods Order the quota of certain surgical goods, such as elastic stockings, belts, etc., had been reduced to 50%, and whether he would investigate the effect of the discouragement of the use of these goods on the health of the public. Mr. LYTTELTON said that surgical apparel was included under the Order in a class covering a very wide range of clothing. Although the quota for the whole class required supplies in the current period to be limited to 50% of such supplies in the standard period, there was nothing, subject to this over-all limitation, to prevent supplies of surgical goods being met to the full extent of essential requirements.

Decisions of Medical Boards.—On December 3 Mr. LAW, replying to Miss Ward, said that the Army Medical Department was the only department which could overrule the medical opinion of the civilian doctors employed in examining recruits, and specialist advice was obtained whenever it was considered necessary. Miss WARD asked whether, if she could supply information of cases where medical opinion had been overruled, Mr. Law would look into them and see that action was taken. Mr. LAW said he certainly would, but he imagined that where medical opinion had been overruled it had been by other medical opinion.

Purchase Tax on Filament Lamps.—On December 3 Captain ELLISTON asked the Chancellor of the Exchequer if he was aware that the Customs and Excise were requiring payment of purchase tax on filament lamps forming an essential part of non-chargeable surgical instruments, and if the exemption granted to medical and surgical appliances could be extended to the accessories necessary for their working. Sir Kingsley Wood said that the tax applied to all electric filament lamps not exceeding 250 watts. Many of the lamps used in connexion with surgical appliances might have other uses, and in those circumstances it would not be practicable to provide for the exemption of such accessories.

Registration of Alien Doctors.—Miss HORSBRUGH told Sir Henry Morris-Jones on December 4 that the Ministers concerned were sympathetically considering the proposal to sanction, for the period of the war, the entry to the *Medical Register* of doctors of Allied countries fighting with Great Britain who were of proved medical attainments and bona fides. Sir HENRY remarked that many physicians and surgeons of European renown were in this country, but were debarred from rendering the services they desired to the Allied cause.

Notes in Brief

It is hoped to complete during January the draft of a first report on the investigations into the problem of silicosis among anthracite and other coal miners. This will include a full account of the medical aspects of the work. Publication will follow.

Dairymen are required to supply in full the milk required for children under the milk-in-schools scheme, but in some areas distributors find difficulty in supplying milk to schools. Lord Woolton is examining the scheme with a view to adapting it to the circumstances of wartime.

The Services

NAVAL AWARDS

Surgeon Lieut.-Commander William McOnie Macgregor, R.N.V.R., has been appointed an O.B.E. (Military Division) for good services with the Somaliland Force.

Probationary Temporary Surgeon Lieut. Kenneth Bryan Scott, R.N.V.R., has been mentioned in dispatches for good services in an enemy air attack.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL ARMY MEDICAL CORPS

Lieut. DUNCAN MACKENZIE, R.A.M.C., of Stoer, Sutherland, was killed by fracturing his skull in a fall from a train near Larbert on November 6. He was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1935. He joined the R.A.M.C. early in the present war and at the time of his death was going home on leave from a station in England.

Prisoners of War

Lieut.-Colonel George Trevor Hankey.
Acting Major Philip Harker Newman, D.S.O.
Captain John Burns.
Captain Frank Bernard Lake.
Captain Walter Martin Nichols.
Lieut. Frederick William Mary Plant.
Lieut. Harold John Seddon.
Lieut. Graves Ernest Stoker.

Medical News

The next term of St. Thomas's Hospital Medical School will begin on January 2, 1941. Full facilities for the pre-medical and pre-clinical courses are available at the new School centre established at Godalming. Arrangements for the full clinical curriculum have been made in Sector 8. The Dean's office remains in London, where interviews may be arranged. Particulars of courses, board and accommodation, etc., may be obtained from the Dean, St. Thomas's Hospital Medical School, Lambeth Palace Road, London, S.E.1, or the Manor House, Godalming.

The next meeting of the Shaftesbury Military Hospital Medical Society will be held at the hospital on Tuesday, December 17, at 3 p.m., when there will be an address on "The Treatment of Compound Fractures of the Leg," to be opened by Prof. Phillip D. Wilson and Dr. Bradford of the American Hospital.

The seventy-eighth annual meeting of the Royal Surgical Aid Society was held at the Mansion House on December 2, with the Lord Mayor in the chair. Sir George Wilkinson said that organizations such as the society were never more wanted than at the present time. The annual report showed the past year to have been one of the most difficult in the experience of the society, its income having fallen by nearly £7,000. The committee appealed for the utmost support as future demands upon the resources of the society were sure to grow. The number of patients assisted by the society during the year was 21,559, and 28,837 appliances were supplied.

The fifth International Congress of Comparative Pathology will be held at Istanbul in 1941.

The next meeting of the Pan-American Medical Association will be held in Buenos Aires in 1941.

Municipal hospitals and such voluntary hospitals as are included in the Emergency Hospital Schemes and auxiliary and convalescent homes established on behalf of the War Office or Ministry of Health may be supplied without restriction with goods falling in Classes 6, 7, 8, 9, and 17 of the Limitation of Supplies Order. These classes cover stuffed goods such as mattresses, pillows, etc., floor coverings, pottery and fired clay products, office furniture made entirely of metal, light fittings, and machinery, plant, and appliances, etc.

Purchase tax is chargeable on yeast "put up" as a medicine in tablet or powder form.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Diphtheria, whooping-cough, pneumonia, and measles have increased in incidence in England and Wales during the week, while the figures for scarlet fever have remained almost stationary. In London all these diseases have increased in incidence, notably scarlet fever, the notifications of which were more than double those of the previous week. There has been a rise in the notifications of cerebrospinal fever, enteric fever, and acute poliomyelitis; the last-named is nearly three times more prevalent than last year.

Measles and whooping-cough remain the most prevalent infectious diseases. As mentioned last week, the two administrative areas of Anglesey and Lincoln (Kesteven) remain free from both measles and whooping-cough; no case of whooping-cough was recorded during the week in Hereford, Kent, Isle of Wight, and Brecknock, but it reappeared in Ely and Carmarthen. For over six months measles has been most prevalent in the county of Lancaster and the West Riding of Yorkshire. The figures in parentheses, which follow those for measles, refer to whooping-cough: Lancaster 2,496 (403); Yorks, West Riding, 2,496 (122); Derby 882 (91); Chester 576 (77); Middlesex 490 (84); Northampton 456 (6); Durham 445 (54); Northumberland 441 (24); London 290 (16). In Scotland the chief notifications were recorded in Aberdeen 170 (18); Dundee 116 (36); Glasgow 54 (49); Edinburgh 44 (11); Falkirk 38 (0); Lanark C. 31 (5).

Although poliomyelitis was present in fifteen administrative areas, less than one-half recorded more than one case and two accounted for nearly one-half the total for the whole country. Westmorland 11, all in S. Westmorland R.D.; Yorks, West Riding, 9 (Barnsley and Sheffield 2 each, Dewsbury, Leeds, Goole M.B., Castleford U.D., Silsden U.D., 1 each); Lancaster 4 (Liverpool 2, Manchester and Oldham 1 each); Glamorgan 4 (Cardiff 2, Merthyr Tydfil 1, Caerphilly U.D. 1); Gloucester 2, in Bristol and Gloucester; Southampton 2 (New Forest R.D. 1, Ringwood and Fordingbridge R.D. 1); Worcester 2 (in Worcester C.B.). The four Scottish cases were in Ayr C. 2, and in Glasgow and Edinburgh.

Registrar-General's Quarterly Returns

England and Wales.—In the quarter ended March 31, 1940, 154,336 live births were registered, 79,529 males and 74,807 females; 6,253 (4.05%) births were illegitimate, 1,101 fewer than in the corresponding quarter of 1938. There were 6,198 stillbirths, representing 3.9% of the total births registered. Deaths during the quarter numbered 204,349 (105,618 males and 98,731 females), equivalent to a rate of 20.3 per 1,000 estimated, the highest recorded since that of 20.9 in the first quarter of 1929. Infant mortality was 77 per 1,000 live births, 1 below the average of the ten preceding first quarters. Among infectious diseases the highest number of deaths were attributable to: influenza 10,499; diarrhoea and enteritis (in children under 2 years) 687; diphtheria 556 (6.3); whooping-cough 167; measles 149; scarlet fever 57 (0.45); enteric fever 24 (12.9). These figures refer to civilians only; those in parentheses are the case fatalities.

Scotland.—During the quarter ended September 30, 1940, there were 21,152 births registered (males 10,939, females 10,213), equivalent to a rate of 16.7 per 1,000 population and the lowest yet recorded in Scotland for the third quarter of any year, the previous lowest being 17.0 in the third quarter of 1938. Illegitimate births were 5.7% of the total, 0.6 below the average for the last five years for this quarter. Still-births numbered 917, equivalent to a rate of 42 per 1,000 total births. The death rate was 11.2 per 1,000 population and is the highest recorded in Scotland for this quarter since 1924, when it was also 11.2. The infantile mortality rate was 57 (among legitimate children 55, and illegitimate children 92), and 2 below the last five years' average for this quarter. Deaths due to infectious diseases (with case fatalities in parentheses) were: diphtheria 160 (4.01); measles 97 (1.3); cerebrospinal fever 70 (14.6); whooping-cough 51 (7.2); influenza 24; scarlet fever 10 (0.5); enteric fever 5 (2.7).

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INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended November 9, 1940.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1940					1939 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	137	8	28	2	3	26	1	3	1	—
Deaths		1	1				—	1		
Diphtheria	1,410	51	477	19	47	967	16	244	40	24
Deaths	31	—	17	1	1	19	—	1	2	—
Dysentery	68	2	50	2	—	41	4	45	—	—
Deaths			—	—	—			1	—	—
Encephalitis lethargica, acute	4	—	1	—	—	6	—	1	—	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever	29	3	7	3	—	17	1	6	4	—
Deaths	4	—	—	—	—	2	—	1	—	—
Erysipelas			58	6	6			71	14	6
Deaths		—	—				—	2		
Infective enteritis or diarrhoea under 2 years										
Deaths	29	3	8	5	4	38	5	15	8	2
Measles	13,247	290	526‡		12	1,146	7	6		26
Deaths	29	1	7	5	—	2	—	—	—	—
Ophthalmia neonatorum	59	1	19	—	—	71	5	25	2	—
Deaths										
Pneumonia, influenzal*	713	51	17	2	4	624	37	4	1	11
Deaths (from influenza)	30	4	3	1	1	41	3	2	—	1
Pneumonia, primary		46	146	15	9		7	148	13	5
Deaths†				9					10	
Polio-encephalitis, acute	4	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	42	—	4	—	—	16	1	2	1	1
Deaths		—	—				—	—		
Puerperal fever	—	—	17	1	—	3	3	3	5	1
Deaths		—					—			
Puerperal pyrexia	119	4	13		—	169	13	23		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,792	104	267	73	52	1,465	36	237	96	106
Deaths	—	—	2	—	—	2	—	—	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths		—	—	—	—		—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,925	16	174‡		20	867	27	34		1
Deaths	16	—	—	1	—	5	—	2	—	—
Deaths (0-1 year)	326	25	52	30	13	287	31	66	40	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,281	1,078	629	190	133	4,992	791	660	222	131
Annual death rate (per 1,000 persons living)			12.7	12.7	11.7			13.4	14.9	11.5
Live births	4,878	400	652	303	200	5,713	658	780	328	211
Annual rate per 1,000 persons living			13.2	20.2	17.5			15.8	22.0	18.5
Stillbirths	199	21	29			235	23	25		
Rate per 1,000 total births (including stillborn)			43					31		

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Since January 1, 1940, figures for London (b) have been for deaths from all forms of pneumonia; the corresponding figures for 1939 relate to deaths from lobar pneumonia only.

‡ Notification in certain administrative areas only.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Longitudinal Markings on Nails

Dr. B. JACKSON writes: In reply to "Veritas" (November 30, p. 772) longitudinal striation of the nails is sometimes an exaggeration of the normal longitudinal ridges of the nail bed. It is common where a focus of infection exists. The condition is also seen in neuritis and hemiplegia, and is also associated with the dry skin and scanty hair of myxoedema. Similar changes may exist where there is a deficiency of vitamins B and D, and administration of the appropriate vitamins will help. Arching of the nails is generally due to chronic pulmonary and cardiac conditions.

Treatment of Brucella abortus Fever

"F.R.C.S.Ed." writes: In reply to "M.D." (November 30, p. 772), I suffered from *Br. abortus* fever two years ago at the age of 66. Treatment with sulphanilamide was tried on two separate occasions with a marked exacerbation of the symptoms. On the second occasion the temperature rose to 104.5° F., with cyanosis and coma alternating with delirium. After recovering from this intramuscular gluteal injections of fouadin were given. After the second injection the temperature became normal and I felt a different man. There were no ill effects from the injections and recovery was uninterrupted.

Treatment of Pressure Sores

Miss D. E. WEBB, S.R.N., writes: In reply to "Inquirer" (November 30, p. 772), I have found the following an effective method of healing this type of pressure sore, but I write only as a nurse. Cleanse twice daily with jug douche of normal saline, massaging the surrounding area well with a soapy hand. Then apply white lint cut to the size of the sore, on which the following ointment is spread evenly: 1 oz. zinc ointment beaten to a cream with castor oil and 2 drachms of tinct. benzoin. Allow additional nourishment and vitamin B. Ointment dressings cannot be disregarded in chronic nursing.

Income Tax

Flat Rates for Use of Car

"E. W." understands that there is a Treasury scale governing payments to Civil Servants for use of their private cars, varying from 2¾d. per mile for 7–8-h.p. cars to 4½d. in the case of cars over 12 h.p.

*** The rates quoted cover depreciation, and so far as we have been able to ascertain still hold good. They would presumably serve as the basis of an estimate if there are no adequate records of cost available, but are probably applicable to many cases where the use is occasional and the all-in mileage cost relatively high.

LETTERS, NOTES, ETC.

The Cover of the "Journal"

Mr. A. RUGG-GUNN (London) writes: Admirers of the very pleasant device which appears on the front cover of the *Journal* may be interested to know that in the Western Ophthalmic Hospital the wall tablets which commemorate donations of a bed were designed and cut by the late Mr. Eric Gill. Shortly after the rebuilding of the hospital it became necessary to consider the nature and design of the first tablets. Mr. Eric Gill designed and cut the inscription in Caen stone without any fee whatsoever except the actual cost of the stone. The latter, with sundry expenses such as transport, was paid by a member of the honorary staff, so that the Western Ophthalmic Hospital became the possessor, at no cost to itself, of these fine examples, which will, I trust, serve as a model and example for all future time.

Dr. FREDERIC SANDERS (London, E.4) writes: If only one still small voice, from the dregs of the profession, reached the august ears of the Editor and his distinguished Journal Committee at the sacrifice of Sir Charles Hastings so soon after his Centenary at Worcester, surely his spirit might have been allowed to rest in the peace of obscurity without the fulsome apologia in your annotation. And if opinion were taken among the goats, might not peradventure even two be found who still wonder why this matter was so vitally urgent that there was no time in a so-called democratic Association to consult the Divisions, why an obscure hospital in London still retains a king over its gateway, why in every public school Founder's Day is a holiday, and who, poor fools, unversed in Art and untutored in Tradition, feel nothing but loathing for the "beautiful design" of the late Mr. Eric Gill, and—dare one hazard the word?—contempt for the people who commissioned it?

Nomenclature of Chronic Arthritis

Dr. A. R. NELIGAN (Droitwich) writes: The review (August 31, p. 288) of *Arthritis and Allied Conditions* by Dr. B. I. Comroe of Pennsylvania University does full justice to a valuable and finely produced book. There is an important point, however, which your reviewer passed over and which seems well worth bringing out. Dr. Comroe has used for the two great types of chronic rheumatic joint cases the nomenclature recommended by our Ministry of Health, by the Committee on Chronic Rheumatic Diseases appointed by the Royal College of Physicians, and sanctified here by long use—namely, rheumatoid arthritis and osteo-arthritis—instead of that which is usual in the United States, and which some people on this side have begun to use, not always, it must be added, correctly. It is pleasant to think of this not only as a fresh attempt to lessen confusion in a difficult medical subject, but as a further sign of the drawing together of English-speaking peoples.

Ocular Complications of Cerebrospinal Fever

Mr. R. LINDSAY REA (London, W.1) writes: May I point out to Major A. N. Fergus (October 26, p. 572) that he will find a complete list of the ocular symptoms found in cerebrospinal fever in *Neuro-Ophthalmology* (p. 485). The first edition of this work is out of print, but the second edition will be available in a few weeks' time.

Infecundity

Dr. E. GALLOP (London) writes: In recent years we have constantly been regaled with more and more astonishing examples of the suggested action of mind on matter, and there were few physical disorders that the enthusiasts would hesitate to label as possibly psychosomatic. With the war came a lull, and more recently high-explosive bombs have diverted our thoughts, lessening our interest in the theories of the psychists. With undiminished enthusiasm, however, Drs. E. Wittkower and A. T. M. Wilson (November 2, p. 586) continue to explore the deep recesses of the mind, and even so physically seeming a matter as reproduction now comes under review. Sterility, after all, may be due to an attitude of the mind, they say, though it seems unfair to put all the blame on the female. Study of the deeply contraceptively conscious (or should it be unconscious?) father deserves some investigation also. It is all very well to talk about a "reversal of possible vaginal peristalsis," but what about a backwardly progressing spermatozoon, or perhaps one obedient to its begetter's will swimming round in small circles and not advancing to the forbidden egg? At least he will be relieved and perhaps emboldened to learn that "experience shows that sterility is unlikely to be the direct result of infrequent intercourse." Have your contributors considered the strange reports, weightily attested, of the ways of some of the South Sea Islanders? Promiscuous intercourse is the rule before marriage, fidelity after. Pregnancy is almost unknown pre-maritally, and contraception, it seems, is not the explanation. Parenthood is unthinkable with them before marriage; it is just not done.

Alcoholism and Cirrhosis of the Liver

Dr. TEMPLE GREY writes: Those who have made many dissections will agree rather with Dr. R. L. Haviland Minchin (November 9, p. 656) than with the "well-known textbook of medicine" that cirrhosis of the liver is by no means pathognomonic of alcoholism. It occurs in children, horses, and teetotallers; while actual alcoholics show far more frequently, in the experience of some of us, gross fatty degeneration of the liver. In addition to this, fatty changes in the heart and kidneys are the rule rather than the exception. So striking a feature is this that I have ventured in more than one place to call it the fatty triad of alcoholism. Moreover, among the non-alcoholic cirrhoses senile cirrhosis of the liver is by no means to be overlooked.